DOCUMENT RESUME

ED 320 508 HE 023 599

AUTHOR	Jacobson, David W., Ed.
TITLE	Management of Accessibility for Handicapped Students in Higher Education.
INSTITUTION	National Association of Coll. and Univ. Business Officers, Washington, D.C.
SPONS AGENCY	Department of Education, Washington, DC.
REPORT NO	ISBN-915164-13-2
PUB DATE	81
CONTRACT	300-79-0797
NOTE	153p.
AVAILABLE FROM	Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.
PUB TYPE	Reference Materials - General (130) -- Reports - Research/Technical (143)
EDRS PRICE	MF01/PC07 Plus Postage.
DESCRIPTORS	*Accessibility (for Disabled); Assistive Devices (for Disabled); *College Students; Comparative Analysis; Compliance (Legal); Databases; Data Collection; Federal Regulation; Guidelines; Higher Education; National Surveys; Organization; *Physical Disabilities; *Planning; *Policy Formation; Resources; Special Needs Students; State Programs

ABSTRACT

This compendium of four mini-projects carried out by a special task force of the National Association of College and University Business Officers (NACUBO) addresses policy and management issues related to providing accessibility to handicapped students in higher education. Topics range from executive policy decisions on compliance with federal accessibility mandates to operational procedures for responding to specific accommodation requests. The compendium is comprised of four sections: Section 1 was developed from a series of site-visit interviews with senior-level decision makers, faculty, staff and handicapped students at six colleges and universities. It contains an overview of accessibility issues and problems that require attention, a discussion of how accessibility considerations can be incorporated into a planning and budgeting process, and a set of guidelines for assessing specific accommodation requests; Section 2 reviews 16 national data bases that describe the handicapped population in the United States and contains summary charts of the characteristics revealed. Section 3 describes the results of a survey that NACUBO mailed to a stratified sample of 944 of its member institutions concerning trends in accessibility expenditures and number and types of handicapped students served; and Section 4 lists adaptive education equipment by impairment (such as hearing or mobility) and then by function (such as writing or speaking). The document contains an index, equipment source list, and lists of information resources and services available to handicapped students. (GLR)

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Section 504 of the Rehabilitation Act of 1973, as Amended: No otherwise qualified handicapped individual in the United States . . . shall, solely by reason of handicap, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

Management of Accessibility for Handicapped Students in Higher Education

National Association of College and University Business Officers

This document has been reviewed and approved by the Office for Civil Rights of the Department of Education. The project was funded by the Department of Education under contract number 300-79-0797. Mention of trade names, commercial products, or organizations does not imply endorsement by the U.S. Government, ACE, or NACUBO.

The manuscript was prepared by NACUBO under a subcontract with the American Council on Education (ACE). ACE's contract with the Department of Education covered other aspects of addressing the needs of handicapped students in higher education. Thus, this document is only one part of a multifaceted program of technical assistance provided by the ACE-sponsored HEATH project (Higher Education and the Handicapped).

NACUBO recommends the use of this document in conjunction with final regulations issued pursuant to section 504 of the Rehabilitation Act of 1973 and the advice of informed legal counsel, as appropriate. Institutional actions under section 504 are the sole legal responsibility of the college or university, and nothing contained in this study should be interpreted as relieving an institution of its obligations to eliminate discrimination on the basis of handicap in its programs and activities.

Library of Congress Catalog Number: 81-82617

ISBN 915164-13-2

**National Association of College and
University Business Officers
One Dupont Circle
Washington, DC 20036**

Printed in the United States of America

Edited by David W. Jacobson

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**For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402**

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Foreword

This document was developed under the aegis of Project HEATH, which is sponsored by the U.S. Department of Education's Office for Civil Rights in conjunction with the American Council on Education. It is a compendium of four mini-projects addressing policy and management issues related to providing accessibility to handicapped students in higher education; topics range from executive policy decisions on compliance with federal accessibility mandates to operational procedures for responding to specific accommodation requests. The study should be most useful as a reference guide for administrators, faculty, and students.

Three themes recur throughout: (1) the distinction between program accessibility, which allows full participation by qualified handicapped students, and facilities accessibility, which describes a barrier-free environment; (2) the determination of qualifications a student must have to participate in an institutional program and academic and technical requirements essential to the program; and (3) the incorporation of accessibility considerations into established institutional planning and policy-making networks. The importance of these issues cannot be overstated.

During the study, information was collected on both the number of handicapped persons in institutions of higher education and the number of dollars institutions have allocated to improving campus accessibility. The trends revealed by this data are important in understanding the needs of the handicapped and the attempts of institutions to respond to those needs. Isolated data elements, taken out of context, are less valuable.

In many instances the study raises questions for which there are no answers or suggests areas in which further investigation would yield useful results. NACUBO urges federal agencies and other interested groups to continue pursuing these issues.

D. F. Finn
Executive Vice President
NACUBO

Acknowledgments

NACUBO is indebted to many persons for their participation in the project that led to the creation of this report. Among these are members of the NACUBO Special Task Force for Section 504, who not only provided initial direction for the project but also contributed many hours of their time in conducting site visits, reviewing drafts, and revising materials. The members are:

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The project director was Robin Jenkins, of NACUBO. She was responsible for the development and implementation of the project workplan and supervised all research. Ms. Jenkins wrote sections 1 and 2 of the final report with the assistance of Claire Guthrie and Barbara Murphy, members of the task force, and Roy Nord, of the NACUBO staff. Laurel Radow, of NACUBO, coordinated the expenditure survey portion of the project and wrote section 3 of the final report. Roy Nord was responsible for the assistive devices directory presented in section 4. The project was originally conceived by Steven Hychka, NACUBO's director of Federal Focus and Management Programs. In his role as senior director, Mr. Hychka provided support and useful advice to project staff. James Hyatt, of NACUBO's Financial Management Center, participated in the site visits and provided many comments on the final draft of section 1.

In addition to the task force and project staff, there were others whose contributions were essential to developing the final report. Gerald Skogley, of the University of North Dakota, assisted in the site visits and reviewed the final draft of section 1. John Lee and Ruth Lamothe, of Abt Associates Inc., were responsible for compiling information from demographic data sources to be used as the basis for section 2. Dorothy Stuckey was instrumental in assembling and analyzing information for the expenditure survey and the

assistive devices directory. Nathan Dickmeyer, of the American Council on Education, devised the computer program to process and analyze all responses from the expenditure survey.

NACUBO also acknowledges those persons in institutions participating in the site visits. Their cooperation and assistance as well as their valuable insights were essential to the development of material in section I. Thanks also go to those persons in 300 institutions who completed the extensive expenditure survey; it is this kind of support from NACUBO volunteers that has enabled the association to undertake studies such as this. Appreciation is also expressed to those many individuals who reviewed and commented on various drafts of this report.

Martha Redden, coordinator of the entire HEATH project, sponsored by the American Council on Education, was involved in each stage of the project, and her guidance has been of great value to the task force and project director. Dr. Redden is director of the Project on the Handicapped in Science, Office of Opportunities in Science, of the American Association for the Advancement of Science.

Richard Rowe, Walter Healy, Rudy Frank, and Ed Drake, from the Department of Education, were project officers for the HEATH project. Their support and cooperation were crucial to development of the final report.

Executive Summary

In fall 1979, NACUBO's special task force for section 504 undertook a study of program accessibility. The objective of the study was (1) to produce materials that would help senior-level managers identify policy issues raised by section 504, and (2) to help those managers understand how accessibility issues affect the institution's mission statement, program policies, capital plans, and financial condition. The task force believes that many senior-level managers and federal enforcement officials have not grasped accessibility as a *program management* issue.

A common response to accommodation requests by handicapped students is to provide support services (such as building modification or readers) without first examining the essential academic and technical standards of the program. This approach leads to section 504 compliance violations and long-term waste of administrative effort and scarce financial resources. The task force believes that such an approach to accessibility results from the failure to include accessibility factors in the evaluation of academic and technical performance requirements and in the projection of student needs.

This study is directed primarily at two audiences responsible for incorporating accessibility concerns into decision-making processes:

- Senior-Level Administrators at Colleges and Universities. The study concentrates on the fiscal, legal, and program implications of incorporating accessibility considerations into policy and planning networks and identifies current information that is inadequate for use in the planning process. The task force supervised efforts to produce supplementary planning information.

- Government Agencies and Handicapped Advocacy Groups. If government agencies are to monitor accessibility, they should understand that establishment of program goals must precede support responses. They must also note the compliance issues that require additional clarification.

Summary of HEATH III Study

The following is a brief review of each section of the study and the corresponding findings and recommendations of NACUBO's task force.

Section I: Overview of Planning for and Management of Accessibility in Colleges and Universities

This section was developed from a series of site-visit interviews between task force members and senior-level decision makers, faculty, staff, and handicapped students at six colleges and universities. It contains an overview of accessibility issues and problems that require the attention of senior program decision makers, a discussion of how accessibility considerations can be incorporated into a planning and budgeting process, and a set of guidelines for assessing specific accommodation requests by handicapped students.

Task Force Findings

- Many senior-level administrators have confused the need for program accessibility with the need for a barrier-free campus.

- Many senior-level administrators have not assumed a visible leadership role in blending accessibility concerns into policy and planning networks; consequently, many important accessibility decisions are left to mid-level staff who have no standard for making such decisions. This often results in an inefficient use of resources and an arbitrary or inconsistent determination of the institution's position on program accessibility.

- Any of the following approaches or philosophies regarding accessibility can be adopted by institutions: ***Nondiscrimination*** commits the institution to providing equal opportunity for qualified handicapped students; ***Affirmative Action*** commits the institution to encouragement of handicapped participation in programs; and ***Rehabilitation***

commits the institution to helping students overcome the effects of any handicapping condition.

- Most institutions have not developed admissions and performance requirements for evaluating the functional qualifications of potential students.

- Many institutions have not developed a process for coordinating and packaging resources to accommodate handicapped students. Lack of a uniform national program for subsidizing structural modifications and necessary aids, benefits, and services has created a rush to identify and coordinate sources of assistance to cover accessibility expenses. Without a priority packaging process, an institution may needlessly have to spend unrestricted funds.

Task Force Recommendations

The task force believes that federal enforcement personnel have not fostered adequate understanding of the concept of "program accessibility." Such inadequate understanding causes scarce resources to be squandered and federal investigations to be mired in irrelevant details of physical facilities. Campus administrators and government investigators and their supervisors need further education and training to enable them to reach a better understanding of the difference between an accessible program that complies with 504 and a "barrier-free" environment.

The general failure of institutions to "plan ahead" further impedes their ability to achieve compliance objectives. Ad hoc, individualized decision making is very expensive and may not result in compliance with the program accessibility standard. Institutional chief executive officers, together with senior-level administrators, must determine in advance the institutional philosophy that will guide accessibility decisions. Academic and technical standards for admission to and participation in the institution's programs must be identified by appropriate academic officers (and/or committees) before accommodation decisions can be made.

Section II: Characteristics of the Handicapped Population and Implications for Higher Education

Section II reviews 16 national data bases that describe the handicapped population of the United States. It provides general information for postsecondary administrators and contains summary charts for number, types, regional and state locations, race, sex, age, income, and educational levels of the handicapped population.

Task Force Findings

- Estimates of the percentage of total U.S. population disabled or impaired range from 6 percent to 20 percent, or from 15 to 45 million people.

- The handicapped population tends to be older, poorer, and less educated than the rest of the population.

- Occurrence of handicaps decreases markedly as education levels increase. Estimates of the percentage of handicapped persons with less than an eighth-grade education range from 10.7 percent to 44 percent. Only 5 percent of the handicapped population has completed college.

- The U.S. Bureau of Education for the Handicapped estimates that 11-12 percent of all elementary and secondary school children are handicapped. Approximately 7.5 percent of all primary and secondary students are served by special programs.

- The number of college and university students who identify themselves as handicapped differs greatly from the number identified as handicapped by college administrators.

Number of Handicapped in Institutions of Higher Education (Expressed as Percentage of Current Enrollments)

Type of Institution	High estimate (self-identification)	Low estimate (identified by administrators)
Public two-year	3.0%	1.1%
Public four-year	2.7%	0.9%
Private four-year	2.0%	0.2%

- Currently, far more handicapped students are enrolled in public two-year institutions than in private four-year institutions.

- Types of handicaps reported by handicapped students enrolled in higher education:

Mobility-related	26%
Vision	21%
Hearing	23%
Other	30%

Task Force Recommendations

College and university planners are hindered by significant gaps in current demographic information on the number and types of handicapped students in primary, secondary, and postsecondary institutions. Much of the current information about handicapped persons in the

U.S. population is derived from definitions of work disabilities or medical conditions. These definitions provide very little insight into the capabilities of a handicapped person in higher education. A classification framework that describes handicaps as functional limitations would produce information more useful to college or university planners, who must accommodate these limitations.

Planners themselves should seek answers to the following questions:

- How many handicapped students are currently graduating from high school? What percentage is going on to higher education? What effect, if any, will the Education of Handicapped Children Act have on handicapped students in postsecondary education over the next five to 10 years?
- Are the retention rates for handicapped students the same as for nonhandicapped students in higher education? Are handicapped students generally able to complete degree programs in a designated time period, e.g., B.A. in four years?
- Are handicapped students enrolled in programs that will enable them to transfer from two-year institutions to four-year colleges and universities? (A plurality of handicapped students in higher education attends public two-year institutions.)

Section III: Comparative Data on Expenditires for Facilities Modification and Programs and Services for Handicapped Students

This section describes the results of a survey that NACUBO mailed to a stratified sample of 944 of its member institutions. The survey requested extensive trend information (1976-1981) on accessibility expenditures and additional information on the number and types of handicapped students served and the identification techniques used to report those students.

NACUBO received about 300 usable responses from this sample. While this was not enough to allow specific statistical projections for all 3,000 higher education institutions in the U.S., the responses were representative enough to allow categorizing of peer groups by size (small, medium, and large), type (two-year, four-year), and governance (public, independent). Only those reporting information for all five years are noted in this executive summary. Readers should refer to Section III for a more detailed evaluation of summary findings for each peer group.

Task Force Findings

Of the 298 responding institutions, 83 public and 43 private institutions reported expenditures for facilities modification for 1976-77, 1977-78, 1978-79, 1979-80, and expenditure projections for 1980-81.

Facilities Modifications Expenditures

	Public (N = 83)	Independent (N = 46)
Five-year total	$35,130,191	$5,561,401
Avg./inst.	$423,255	$120,900
Percentage of 1976-77 capital budget	5.6%	2.3%
Percentage (projected) of 1980-81 capital budget	19.1%	11.5%

The trend in the NACUBO survey may indicate that expenditures for facilities modification have quadrupled from 1976-77 to 1980-81. If this trend reflects the behavior of all 3,000 higher education institutions in the U.S., two conclusions could be drawn.

- Original government estimates are very low ($565 million as the total amount needed to modify facilities for all 3,000 institutions). And/or
- Many institutions have gone beyond minimum requirements for facilities modification.

While most of the 83 public institutions (representing 49 states) reported receiving some state funds for modifications, the largest burden fell on the institutions themselves. The 46 private institutions received no outside support.

Most responding institutions, particularly the private ones, indicated that they have spent less than half of the funds assigned (in transition plans) to facilities modification. Most institutions attributed the rising cost of modifications to multiple or conflicting federal, state, and local building standards for accessibility.

Most money for programs and services for the handicapped comes not through institutions but through the student, from programs such as Vocational Rehabilitation. NACUBO surveyed its members because many state vocational rehabilitation agencies are claiming that institutions should pay for more of these services.

Of the 300 responding institutions, 60 public and 19 private institutions reported program and service expenditures for accessibility for 1976-77, 1977-78, 1978-79, 1979-80, and expenditure projections for 1980-81.

Program and Service Expenditures for Accessibility

	Public (N = 60)	Independent (N = 19)
Five-year total	$14,292,035	$1,079,639
Avg./inst.	$238,201	$56,832
Percentage of 1976-77 E&G budget	0.2%	0.5%
Percentage (projected) of 1980-81 E&G budget	0.3%	0.3%

The trend in the NACUBO survey may indicate that expenditures for programs and services for handicapped students have doubled from 1976-77 to 1980-81. Institutions have indicated that any shift of financial responsibility for programs and services away from state vocational rehabilitation agencies would create a major burden.

Task Force Recommendations

Representatives of handicapped interest groups, state, federal, or local agencies, builders, architects, corporations, organizations, and individuals obligated to comply with federal and state civil rights requirements should meet to discuss the development of a national standard for evaluating the accessibility of buildings. At a minimum, this standard should dictate that all federal agencies use a *single* federal standard for evaluating and achieving accessibility in buildings constructed with federal funds. Federal civil rights agencies should also consider buildings constructed with private, state, or local monies to be in compliance with all federal requirements if such buildings were constructed or modified to meet a state or local accessibility code.

Better planning and management alone cannot resolve the problems associated with allocation of scarce resources. Funding to assist and encourage accessibility efforts should be identified, and such assistance must meet the *educational* as well as vocational objectives of the handicapped. Also, federal and state rehabilitation funds should not be terminated simply because bureaucrats have decided that a particular handicapped person has become minimally competent to engage in competitive employment. The federal policy favoring access to education (embodied in the Education of Handicapped Children Act) should not be frustrated at the postsecondary level by funding programs targeted to meet limited, and decidedly "low expectation," vocational objectives.

In addition, federal state, and local funds should be committed to help institutions meet the capital building and equipment costs associated with assuring access for the handicapped. The Emergency School Assistance Act supports Title VI compliance activities, and a similar federal program to assist 504 compliance effort should be funded.

Section IV: Prototype for an Assistive Device Directory for Colleges and Universities

In this section, adaptive education equipment is listed by impairment (such as hearing or mobility) and function (such as writing or speaking). The entry for each device contains descriptions, price ranges, and manufacturers.

Task Force Findings

- No single source currently lists all adaptive education equipment for handicapped students in higher education.
- It is very difficult for faculty, staff, or handicapped students unfamiliar with the range of available devices to easily locate ones that will meet student needs at reasonable prices.
- The industry that manufactures the products changes constantly because of advances in technology, increased enrollment of handicapped in higher education, and the volatility of device producers. It is thus necessary to produce annual updates of any device directory.

Task Force Recommendation

The assistive devices directory presented in this report is a prototype and only the first step in developing a comprehensive and usable system of identifying equipment for handicapped students in higher education. The task force recommends further development of such a directory and creation of guidelines for annual updates.

Section I: Overview of Planning for and Management of Accessibility in Colleges and Universities

Background

During the past two years, NACUBO has produced two documents, *A Guide to Section 504 Self-Evaluation for Colleges and Universities*, and "Issues and Answers for Implementing Section 504," which have assisted college and university officials in evaluating program accessibility for the handicapped on campus.

Since these initial evaluations were completed, special support offices for advising committees and advocacy groups have been created, and a significant amount of literature about the needs of the handicapped has been published. Millions of dollars have been spent to modify facilities and provide auxiliary aids to the handicapped. While these developments clearly document higher education's commitment to the handicapped, much of the effort and resources could have been more effectively and efficiently spent if institutions had incorporated accommodation considerations into their planning and decision-making processes. In fact, many resources continue to be wasted or incorrectly targeted because institutions do not have in place policies or procedures that would facilitate accommodation decisions.

Purpose and Content

The purpose of this section is to identify those accommodation policies and procedures that should be developed in the planning process and implemented according to a suggested operational guideline. The report was developed under the direction of NACUBO's section 504 task force, which consisted of an institutional president, a vice president for finance, two vice presidents for physical planning, an affirmative action director, an employment opportunities analyst, and an attorney. The report describes a process for integrating accommodation policies and institutional planning and for implementing those policies. Identified are participant roles, necessary policies, and various steps for evaluating specific accommodation requests. The material includes charts, diagrams, checklists, and sample forms to assist decision makers. The task force developed this process from their observations of accommodation practices at six institutions on the basis of program array, location, enrollment, physical environment, administrative style, and philosophy for accommodating the handicapped. The specific objectives of these extensive two-day site visits were:

- To interview institutional decision makers about the accommodation process on their campus and to determine how decisions were reached.
- To determine how the institution coordinated its accommodation efforts.
- To identify section 504-related problems at each campus.

The task force also supervised the development of additional planning materials that complement the process outlined in this report. An overview of the handicapped population (its characteristics and the implications these figures have for higher education) has been assembled from 16 national data bases (see section II of the report). NACUBO also devised and mailed a survey to a sample of its membership requesting funding information (source, amount) on expenditures for modifying facilities and providing programs and services. Responses from 298 institutions have been categorized and reported by institutional type, size, and control (see section III of the report). Finally, a prototype for an assistive devices directory indexed by impairment, specific functional requirements, and academic program has been developed to facilitate the identification of appropriate auxiliary aids for specific accommodation requests (see section IV of the report).

1: Institutional Characteristics and Accessibility

The site visits demonstrated that several program, environmental, and administrative variables shape an

institution's perceptions about accessibility by defining program performance standards, by influencing judgments about what constitutes equal opportunity in education, and by determining the amount and allocation of resources for accessibility. The following variables are the basis of an institution's stance on accommodation.

1. Institutional Mission:	Relative emphasis on research, teaching, or public service.
2. Program Type and Level:	Number and type of academic programs; numbers of undergraduage, graduate, and professional programs.
3. Admission Requirements:	Academic prerequisites for admission, scores on standardized tests, interviews, medical examinations, and residence requirements.
4. Academic and Technical Performance Requirements:	Specific course requirements, grade point averages, lab work, field trips, cooperative education, and workshops.
5. Physical Environment:	Design, size, and type of buildings, campus terrain, climate, housing, transportation.
6. Administrative Structure:	Which executive officers control various programs? How do these administrators relate to one another?

This chapter describes the disposition of each of these variables in the six institutions visited by the task force. Subsequent chapters make clear how a particular institution's mission, structure, or environment affects planning and policy developments. Chapter 2 identifies both process and policy problems that were noted as institutions addressed accessibility issues. Chapter 3 focuses on process issues by outlining how accessibility issues should be incorporated in an institution's planning and budgeting process. Chapter 4 deals with issues by introducing operational guidelines for assessing specific accommodation requests.

Statement of Institutional Mission

The statement of institutional mission provides the philosophical foundation for determining what programs are offered, to whom they are offered, and how they are provided. Mission statements indicate whether an institution is publicly or independently controlled, whether it is part of a larger system, and who maintains direct governance over it.

Five out of the six institutions either totally or partially belonged to a larger district or state system of institutions. Some of these systems maintained tight control over various program decisions; others required only certain operational controls. Membership in a large system is very important because program offerings, administrative and financial operations, and the number of campus centers are often influenced or determined by a system office. Figure 1 illustrates the variety of mission statements among the site visit institutions and how these variations affected governance, size, and relative emphasis on research, teaching, or public service.

Mission statements have a direct impact on the programs at an institution and hence on the number and type of students who enroll there. For example, the two institutions that were research-oriented had the largest number of graduate students, while the two institutions (community colleges) that emphasized public service had the largest number of part-time, noncredit students. Areas of recruitment for student body are also affected by mission statements and reflect the different student markets among the six institutions. Figure 2 illustrates variations among student body composition for the six site-visit institutions. Those institutions with a large percentage of part-time and commuting students had the largest number of handicapped students (see figure 3). The handicaps most frequently reported at these institutions were "mobility-related" and "other medical impairments," e.g., diabetes and epilepsy (see figure 4). All institutions reported increases in numbers of handicapped students for each year from 1976 through 1980. The percentage of each site-visit institution's total enrollment is roughly similar to the percentage of enrollment reported as handicapped by similar institutions in section III of this report (see figure 5).

Program Type and Level

Two basic components make up an institutional program array: the type and level of schools, colleges, or academic divisions, and the number and type of specific courses offered in any curriculum. The site-visit institutions represented a spectrum of program arrays. The four-year institutions had from 2 to 14 colleges; the two-year institutions offered a range of hundreds of courses. Readers should note that program offerings varied for different branch campuses of the same institution. For example, one institution had a main campus with professional schools located in other parts of the state, another institution had 4 campus centers and 23 extension centers

Figure 1: Institutional Mission

	Institution A	Institution B	Institution C	Institution D	Institution E	Institution F
Mission	To provide students with an opportunity to achieve academic excellence in their field of study.	To provide minority students with an education in liberal arts, teacher education, and career education.	To recruit and accept students from all segments of the metropolitan area and to minimize all social, economic and physical barriers to admission.	The discovery of knowledge and the showing of that knowledge through teaching.	To provide academic excellence through a distinguished faculty whose primary responsibility is superior teaching; by offering instruction, aided by faculty research activity, to attain professional and occupational goals as well as a broad liberal education.	To provide the student-centered segment of the district with needed self-development.
Control	Private and state partnerships	Private	Public	Public	Public	Public
Type	Research university	Liberal arts college	Community college	Comprehensive university	Comprehensive university	Community college
Number of campuses and branches	1 main campus. Professional schools located in a different part of state.	1 campus	4 campuses, 23 extension centers. Member of state community college system.	1 main campus complex, 2 junior college-level branches. Member of state university system.	1 main campus, 2 small branches. Member of state college system.	1 of 2 main campuses in a district. Member of state community college system.
Membership in larger system	Public-supported colleges belong to state university system.					
Governing Bodies	Board of trustees/state chancellor's office for university system	Board of trustees	Local trustees and state community college systems offices	Local trustees and state Board of Regents	Local trustees and chancellor's office for state colleges	Local trustees and state community college systems offices

Figure 2: Enrollment Information (1979) Fall Semester

Characteristics	Institution A	Institution B	Institution C	Institution D	Institution E	Institution F
Headcount	16,300	1,600	60,000	39,000	30,000	23,500
Students	16,300	1,600	—	28,000	22,000	—
Part-time students	—	—	—	13,000	8,000	—
Undergraduate	11,800	1,600	—	31,600	23,000	—
Graduate	4,500	—	—	6,400	7,000	—
Credit	16,300	1,600	43,000	39,000	30,000	—
Noncredit	—	—	17,000	—	—	
Commuters	—	400	60,000	26,600	22,500	23,500
Residential	16,300	1,200	—	3,800	7,500	—
Area of recruitment	heavily in region; national	tri-state area	metropolitan area; national	state	state	county

Figure 3: Number of Handicapped Students

Year	Institution A	Institution B	Institution C	Institution D	Institution E	Institution F
1976-77	17	NA	500	NA	359	1,868
1977-78	22	2	800	NA	369	2,150
1978-79	39	4	1,000	NA	388	1,608
1979-80	50	6	+1,000	75	426	1,829

that each had varying program offerings. Figure 6 compares program arrays among the six site-visit institutions.

Admission Requirements

By developing academic and nonacademic admissions requirements, colleges and universities establish criteria for eligibility in various programs. Performance in secondary school courses, scores on standardized tests, and possession of a high school diploma are academic factors to be considered in the admissions process. Residency requirements, interviews, and medical examinations are nonacademic admissions criteria. Figure 7 ill-

Figure 4: Types of Handicaps Reported in 1979-80

Types of Handicaps	Institution A	Institution B	Institution C	Institution D	Institution E	Institution F
Mobility	13	4	112	4	366	1,326
Hearing	5	0	83	8	20	12
Vision	12	0	81	11	19	22
Learning disabled	7	0	431	NA	7	469
Other	13	2	293	52	14	1,829

Figure 5: Number of Handicapped Students as % of 1979-80 Enrollment*

Large 4-Year Private		Small 4-Year Private		Large 2-Year Public			Large 4-Year Public		
A	peer group	B	peer group	C	F	peer group	D	E	peer group
.3%	.5%	.3%	.6%	1.7%	7.6%	1.1%	.2%	1.0%	.9%

*Peer group averages were obtained from a survey of NACUBO members. See section III for further discussion of survey.

Figure 6: Program Array

	Institution A	Institution B	Institution C	Institution D	Institution E	Institution F
Colleges & Divisions	13 colleges	2 colleges	3 divisions	18 colleges	8 colleges 1 division	3 divisions
Type and Level of Colleges and Divisions	7 undergraduate 6 graduate	2 undergraduate	college transfer occupational community service	14 undergraduate 1 continuing education 2 professional 1 graduate	8 undergraduate 1 graduate	college transfer occupational community service
Number & Types of Programs	100+ programs	28 bachelors programs	college transfer 40 programs occupational 53 programs community service +100 programs	25 bachelors programs 25 masters of arts 32 masters of science 4 masters of business 42 doctoral programs	72 bachelors programs 52 masters programs 4 PhD programs	college transfer
Number of Libraries	18	1	library on each of 4 campuses	19	3	1

ustrates admissions requirements across the six institutions.

Academic and Technical Performance Requirements

Before an institution awards a degree to a student in a credit program, that student must demonstrate that he/she has met all performance requirements in the program. The most obvious is successful completion of a set of specified course requirements that constitute the program curriculum. Many of the site-visit institutions offered similar programs with differing requirements. For example, a liberal arts curriculum in one institution required several hours of a foreign language and the passing of oral and written proficiency tests; at another institution, the foreign language requirements were based only on written skills. Among the six institutions many variations were found in particular course requirements, number of hours required in specific areas, and minimum required grade-point averages.

Other requirements that varied among institutions included participation in field trips, special projects, laboratory work, proficiency in operation of course-related equipment, participation in cooperative education or internship programs, and use of campus libraries. Some of these performance criteria are stated with the curriculum requirements while others are implied.

Performance expectations vary from campus to campus because they reflect the institution's educational philosophy, regional accreditation standards, methods of instruction, and institutional and student goals.

Figure 7: Admission Requirements

	Institution A	Institution B	Institution C	Institution D	Institution E	Institution F
Require H.S. Diploma	yes-all programs	yes-all programs	yes-college transfer no-occupational	yes-all 4-year programs no-occupational	yes-all programs	yes-college transfer no-occupational
Require Test	yes ACT	yes SAT	no	yes-all programs	yes	no
Avg. Test Score	SAT 1400-1500	SAT 700-900	SAT none	SAT	Combination of grades and SAT score. SAT Averages: Verbal 426—Math 471 (79-80)	no
Interview Required	yes-for some colleges	no	none	yes for some colleges	no	yes-for some programs
Medical Examination	yes	yes	no-but student's voluntary completion of health card	yes	no-but access to disabled student services and programs requires completion of medical health history questionnaire	no
Other Requirements	specific secondary school courses for various colleges	completion of 16 high school units		specific secondary school requirements for various colleges	specific secondary school requirements for various colleges; competency tests	some programs require special application forms
Residency Requirement	none-but in-state residents given priority in state-controlled	none	none	none-but admission is limited to out-of-state students	none-but admission to out-of-state students is limited	yes
Application Deadline	early admission Nov. 1 of preceding year regular admission Jan. 15	30 days before semester begins	in-state student, before semester begins; out-of-state, 30 days before semester begins	Dec. 15 of previous year	Nov. 30 for subsequent fall semester; Aug. 30 for subsequent spring semester; applications accepted after these dates until capacities reached	district residents, before semester begins; out-of-district, June 1

Figure 8: Region, Location, Climate, and Terrain

Campus Characteristics	Institution A	Institution B	Institution C	Institution D	Institution E	Institution F
Region	northeast	southeast	southeast	midwest	west	west
Location	rural	urban	urban/suburban	urban	urban	suburban
Climate	harsh/much snow	temperate/little snow	warm/no snow	harsh/snow	warm/no snow	warm/no snow
Terrain	very hilly	slightly hilly	flat	very hilly	hilly	flat

Physical Environment

The site-visit institutions were located in all regions of the country and in climates that varied from very harsh and cold to warm year-round. One institution was located in a rural area, four had campuses in urban areas, and two had campuses in suburban areas. Terrain also varied significantly among institutions, from two very hilly campuses to two very flat ones (see figure 8 above).

Ice and snow and hilly terrain are obviously problems for many mobility-impaired students, and some evidence suggests that many handicapped students are influenced in their choice of a college by weather and terrain.

The oldest campus was founded in 1819 and the newest in 1967. This age difference is reflected in factors such as the number of historic buildings, variety of architectural styles, and the amount of maintenance required for each building. Campus sizes ranged from 112 acres to 714 acres, and from 19 to 100 buildings.

Two campuses were entirely commuter; that is, they had no housing facilities. Housing at the four other institutions varied from on-campus dormitories to off-campus apartments. Responsibility for housing ranged from the institution to private contractors or housing referral services. Figure 9 illustrates specific facilities characteristics for each of the site-visit institutions.

Figure 9: Facilities Characteristics

	Institution A	Institution B	Institution C	Institution D	Institution E	Institution F
Founding Date	1865	1867	1960	1819	1897	1967
Number of Acres	740	NA	430	200	249	112
Number of Buildings	90	29	19	100	85	50
Number of Dormitories	—	7	0	7	6	0
Number of Historic Bldgs.	14	1	0	0	0	0

Figure 10: Transportation

	Institution A	Institution B	Institution C	Institution D	Institution E	Institution F
Transportation System for Campuses	Yes[1]	No	No	Yes[1]	—	No
Special Transportation System for Handicapped Only	No	No	Yes	Yes	Yes	Yes

[1]Accessible to the handicapped

Two of the campuses had transportation systems that were accessible to the handicapped. The two commuter campuses had no transportation systems but did provide special vans for transporting handicapped students to and from campus. Only one campus had neither a transportation system nor any special provisions for transporting the handicapped (see figure 10 above).

Organizational Structures

College and university organizational structures are affected by factors such as control (public/independent), membership in a larger college or university system, existence of multiple campus centers, and the number and types of programs offered at the institution. The chief organizational officer normally is aided by senior

Figure 11: Executive Organization Structures

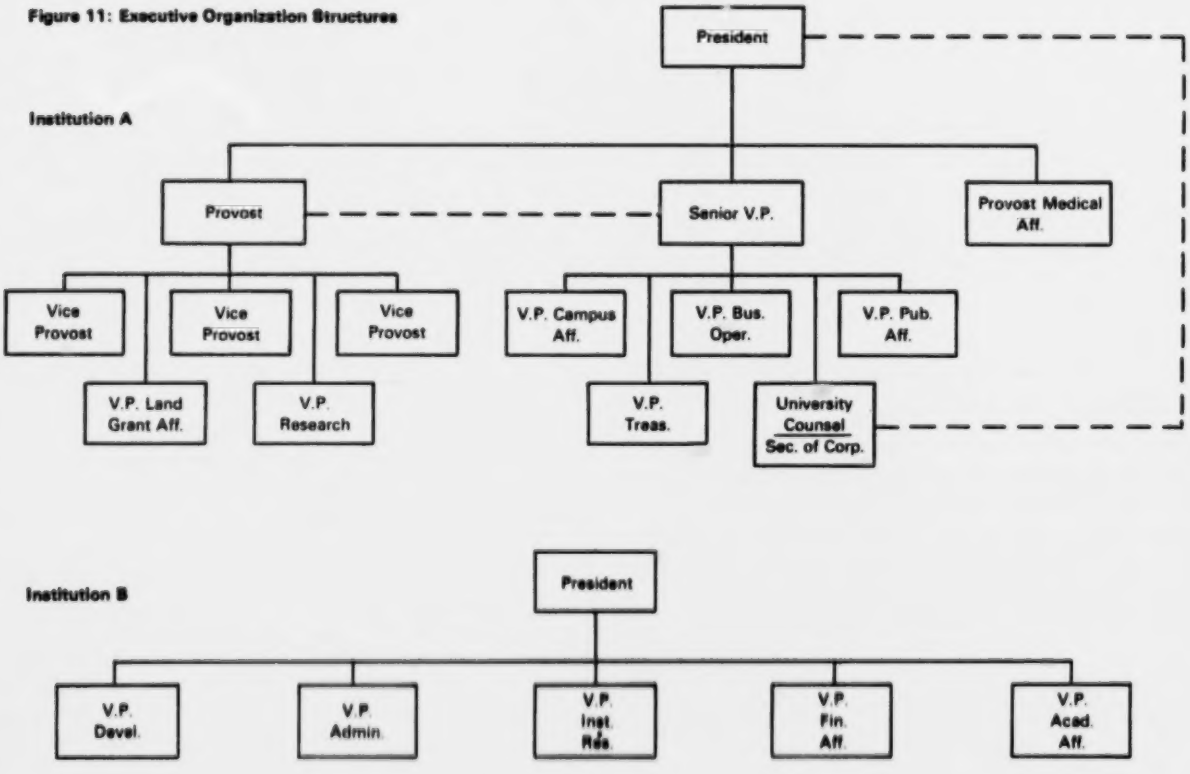

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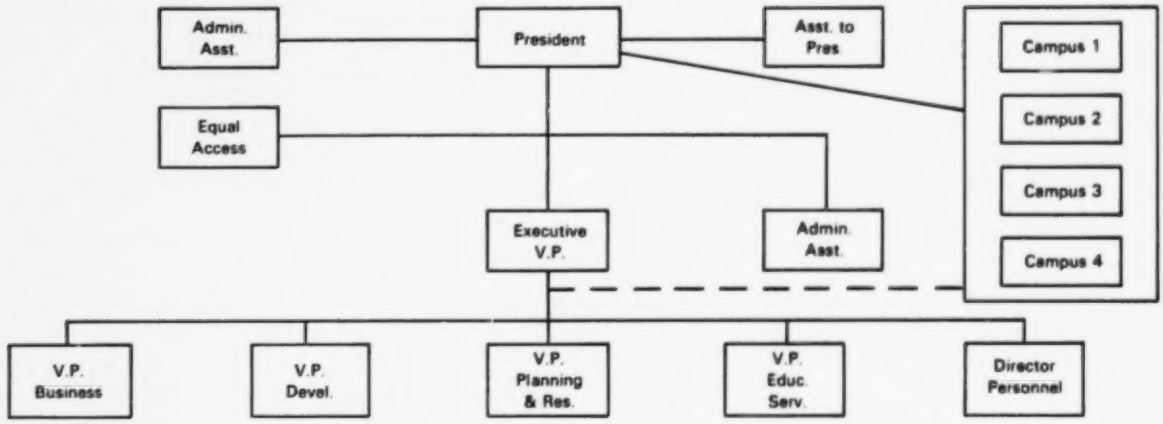
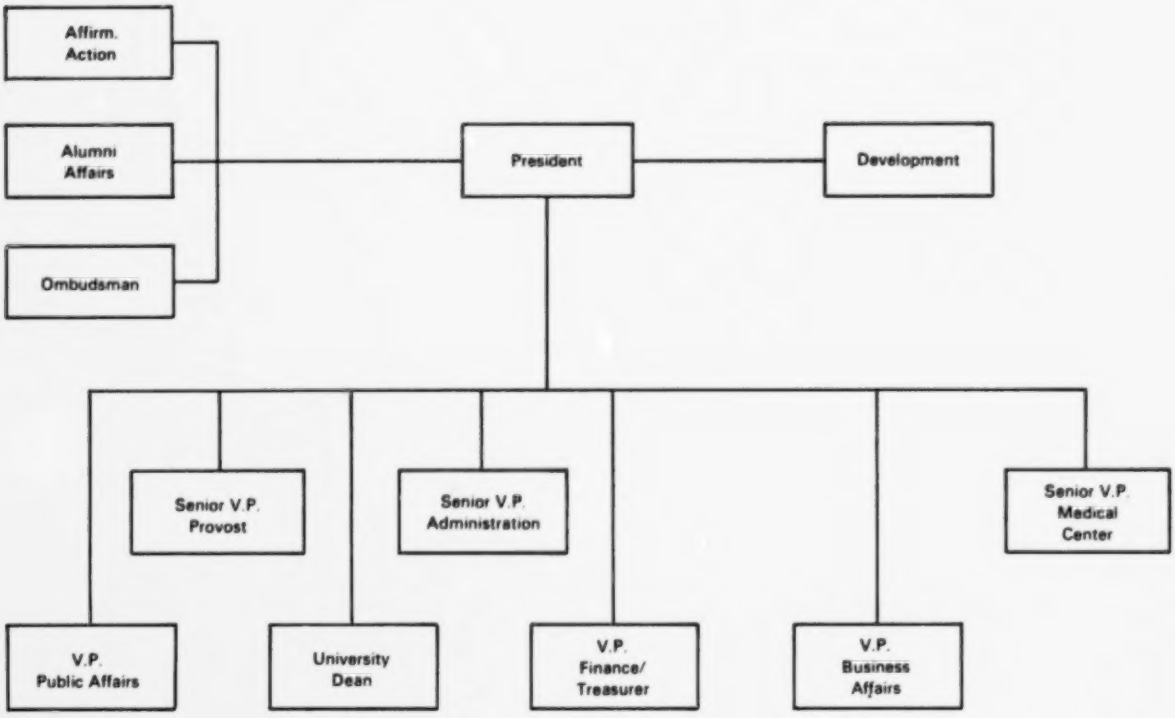
Figure 11: Executive Organization Structures (cont.)

Institution C



Institution D

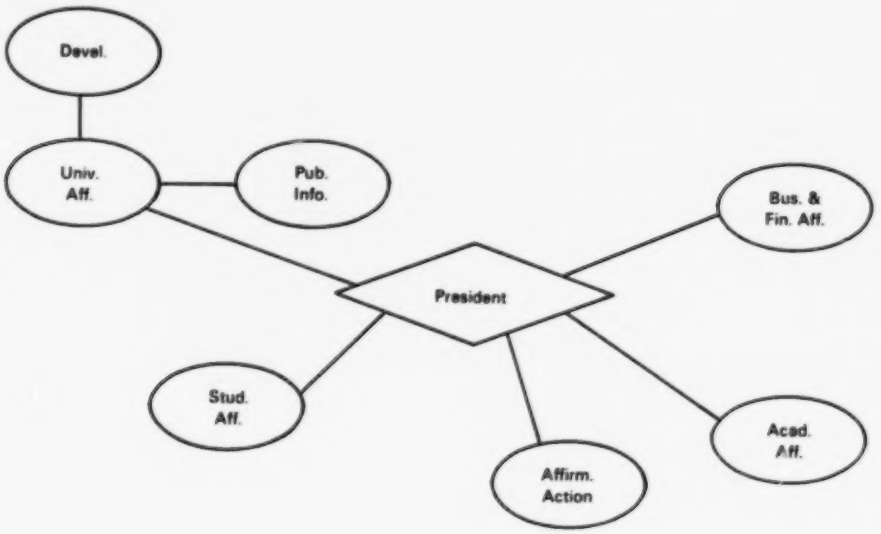


administrators (vice presidents for academic affairs, finance and administration, and student affairs), and a number of specialized staff such as an affirmative action officer, institutional research officers, or university counsel.

How administrators and support staff relate to the president and to each other varies. Some organizational structures are flexible, participatory, and decentralized, while others are hierarchical, authoritarian, and rigid. Figure 11 illustrates executive-level relationships among

Figure 11: Executive Organization Structures (cont.)

Institution E



Institution F

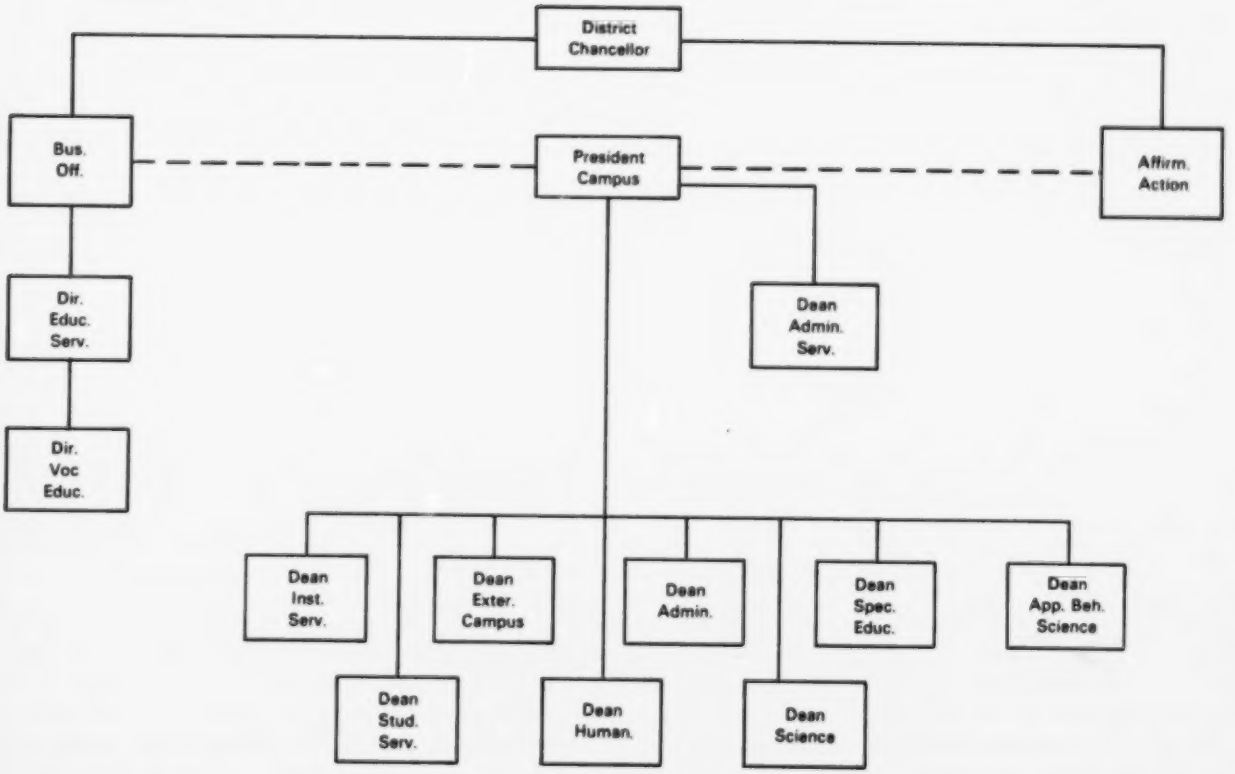


Figure 12: Executive Responsibilities for Program Activities

	Institution A	Institution B	Institution C	Institution D	Institution E	Institution F
Financial Aid	Provost	VP Bus	Dean Stud Serv	Sr VP & Provost	Dean Stud Aff	Dean Stud Serv
Housing	VP Campus Aff	VP Fin Aff	Exec Asst Pres	Sr VP & Provost	Dean Stud Aff	Dean Ext Campus
Facilities	VP Facils & Bus Oper	VP Fin Aff	VP Bus	VP Bus Aff	VP Bus & Fin Aff	Dean Admin Serv
Transportation	VP Campus Aff	VP Bus	VP Bus	VP Bus Aff	VP Bus & Fin Aff Dean Stud Aff[2]	Dean Spec Educ
Security & Safety	VP Campus Aff	VP Fin Aff	VP Bus	VP Bus Aff	VP Bus & Fin Aff	Dean Activities
Food Service	VP Campus Aff	VP Fin Aff	Exec Asst Pres	Sr VP & Provost	VP Bus & Fin Aff	Dean Activities
Administration & Registration	Provost	VP Acad Aff	Dean Stud Serv	Sr VP & Provost	Dean Stud Aff	Dean Stud Serv
Libraries	Provost	VP Acad Aff	VP Campus Aff	Sr VP & Provost	VP Acad Aff	Dean Instruc Serv
Academic Departments	Provost	VP Acad Aff	VP Campus Aff	Sr VP & Provost	VP Acad Aff	Executive Dean
Athletics	Senior VP	VP Admin	Dir Stud Activ	Sr VP Admin	President	Dean Activities
Counseling—Academic[3]	Provost	VP Admin	Dean Stud Serv	Sr VP & Provost	Dean Stud Aff	Dean Stud Serv
Counseling—Placement[3]	Provost	VP Admin	Dir Career Plng	Sr VP & Provost	Dean Stud Aff	Dean Stud Serv
Counseling—Personal[3]	Provost	VP Admin	Dir Stud Activ	Sr VP & Provost	Dean Stud Aff	Dean Stud Serv
Health Service	VP Campus Aff	VP Admin	Spec Asst to VP	Sr VP & Provost	Dean Stud Aff	Dean Stud Serv
College Store	VP Campus Aff	VP Admin	VP Bus	VP Bus Aff	VP Bus & Fin Aff	Dean Activities
Personnel	Senior VP	VP Bus	VP Bus	Sr VP Admin	VP Bus & Fin Aff	VP Bus

[1]University Program
[2]University's Disabled Students Program
[3]Student-Related

line and staff personnel in the six institutions visited, and figure 12 above compares functions and activities controlled by senior program administrators.

The following observations illustrate the pattern that emerged as the task force sought to identify the senior program officers and staffers who handled 504-related issues on campus.

A. 504 compliance officers are usually affirmative action officers who report directly to the president.
B. The chief business officer controls the plant department, which responds to the need for physical accommodations and modifications to buildings.
C. The vice president for student services is normally responsible for the day-to-day operational work of assisting handicapped students.
D. The vice president for academic affairs is responsible for academic program accessibility.

On several of the campuses, the presence of an individual with a strong personal interest in or commitment to handicapped students created a de facto organizational structure that differed from the general model. This person generally served as a catalyst for change and encouraged a strong interest in accessibility-related issues. When he/she left or was absent, the integration of the 504 program into the regular organizational structure suffered noticeably.

2: Process and Policy Issues

During the site-visit interviews, administrators, faculty, staff, and handicapped students identified both policy and process problems that impeded an effective approach to accessibility. The purpose of this chapter is to identify problem areas observed by the task force during the site visits and to lay the groundwork for the planning materials outlined in chapter 3 of this section and the operating procedures developed in chapter 4 of this section.

Some *process issues* identified by the task force are organizational, some are related to management's ability to control policy and financial aspects of various accessibility decisions, and some involve operational procedures that deal with specific accommodation requests.

Organizational Problems

- Lack of executive level involvement in policy decisions.
- Lack of coordination between program areas.
- Unclear lines of decision-making responsibility.
- Inadequate communication between decision makers and operations-level faculty and staff.

In many of the site-visit settings, executive-level managers delegated total responsibility for section 504-related issues to an ad hoc committee or to a mid-level manager, e.g., a physical planner or student service director for handicapped students. Often, the president neither knew nor understood the need for an institutional philosophy on accommodating students. Lack of leadership in resolving accessibility questions seemed to result in a de facto transfer of policy-making authority to mid-level managers who make day-to-day operational decisions about accessibility. "Passing off" responsibility for accessibility to mid-level managers can result, at a minimum, in misrepresentation or confusion about an institution's intentions regarding accessibility and can

set undesirable precedents. Lack of direction from senior officers also increases the probability that resources will be inefficiently allocated to achieve accessibility, e.g., thousands of dollars may be spent in modifying structures while the faculty is uninformed about program accessibility requirements. Clearly defined control and direction are required if institutional policies and philosophies on accessibility and accommodation are to be implemented consistently throughout the institution.

Control Problems

- Inability to identify and coordinate resources for accessibility.
- Failure to project future demand and to anticipate future needs.

The lack of a uniform national program for subsidizing structural modifications and aids, benefits, and services has created a rush to identify and assemble sources of assistance to cover accessibility expenses. The ability to identify outside funding sources to satisfy eligibility criteria, and to coordinate funds for accessibility becomes critical if an institution is to satisfy compliance requirements and minimize dependence on internal monies. Coordinating these funds is difficult because (1) some are available directly to the student, and others come through the institution; (2) eligibility criteria for various programs are often different and conflicting; (3) receipt of funds occurs at different times; and (4) these programs require various verification and documentation efforts by the institution. As a result, many institutions have great difficulty in projecting the availability of funds, in allocating funds efficiently, and in auditing expenditures for program accessibility.

Operational Problems

- Ad hoc process for evaluating specific accommodation requests.

Federal regulations require that every accommodation request be evaluated on an individual basis so that each decision will reflect an accommodation that produces an equally effective education for the handicapped students. Many institutions have misinterpreted this mandate and base accommodation decisions on the subjective judgment of some faculty or staff member. These judgments are made without the benefit of a formalized review process that identifies all questions which should be considered and various institutional accommodation policies that would help shape such judgments. In situations where no operational guidelines exist for reviewing accommodation requests, the short term compliance consequences of a decision are not identified nor are the longer-term implications of an undesirable precedent or institutional commitment.

Policy Issues

Policy issues that surfaced during the site visits can be classified as the development of an institutional accessibility philosophy and goal, establishment of an institutional statement of program coverage under section 504, evaluation of "essential" academic and technical requirements for admission to or participation in an academic program, and accommodation policies.

- Inadequate identification of an accessibility philosophy and goal.

An accessibility philosophy is the conceptual basis for subsequent actions and accommodation policies. It can have long-term implications for the institution's mission, academic policies, capital plans, recruiting, and admissions and can affect existing administrative structures. The task force found that most institutions have not articulated an accessibility philosophy and thus experience some confusion about questions of program accessibility or requests for specific accommodations.

- Inadequate identification of activities as covered by section 504.

Section 504 applies to all "recipients" of "federal financial assistance." A recipient is defined by the Department of Education as "any state or its political subdivision, any instrumentality of a state or its political subdivision, any public or private agency, institution, organization, or other entity, or any person to which federal financial assistance is extended directly or through another recipient, including any successor, assignee, or transfer of a recipient, but excluding the ultimate beneficiary of the assistance."

"Federal financial assistance" is defined as "any grant, loan, contract (other than a procurement contract or a contract of insurance or guarantee), or any other arrangement by which the Department of Education (ED) provides or otherwise makes available assistance in the form of (1) funds; (2) services of federal personnel; (3) real and personal property or any interest in or use of such property. . . ." The Department of Education interprets this definition of "federal financial assistance" as including student aid and veterans assistance programs.

This interpretation makes virtually every college or university in the U.S. subject to section 504. Unless this interpretation is altered through judicial or legislative action, most colleges and universities must deal with accessibility issues, in programs and activities managed internally as well as in those operated under contract by external organizations. Thus, integral programs such as contracted food services or practical training opportunities that are part of an institution's academic program are subject to section 504 regulations.

Institutions are also forbidden to provide "significant assistance" to organizations or persons who discriminate against qualified handicapped persons. This could include labor unions, insurance providers, student groups such as sororities or fraternities, off-campus housing listing services, organizations providing scholarship aid and receiving administrative help from the institution, employers using a campus placement service, or recreational organizations.

Because the regulations and policy interpretations do not adequately address the complicated legal questions of an institution's relationships with such organizations or persons or define clearly what is "significant assistance," each institution must develop, in consultation with legal counsel, its own definitions of compliance and scope of coverage. The task force found that many institutions have not addressed these questions and thus are unsure of the acitivities covered by section 504.

- Evaluation of academic and technical requirements for admission to or participation in an academic program.

Another policy issue noted by the task force is the failure to identify academic and technical requirements and to evaluate the importance to the program of those requirements.

Chapter 1 described several kinds of technical requirements such as use of the library, field trips, cooperative education, laboratory work, and the ability to operate special equipment. Proper identification of requirements allows evaluation of student qualifications for academic program and selection of appropriate accommodations for handicapped students.

Because preadmission inquiries about handicaps are prohibited, it is essential to publicize technical requirements in admissions literature so that potential students are aware of all admission standards. The task force noted that many institutions have not identified and evaluated academic and technical requirements and thus are unable to determine if handicapped students are "qualified."

Accommodation Policies

- Lack of an institutional policy for determining who is eligible to receive benefits under section 504.
- Lack of a process for determining qualifications of handicapped persons.
- Lack of an institutional auxiliary aids policy.

All qualified handicapped persons (as defined in federal regulations) are eligible for the benefits of section 504. Federal regulations define a "handicapped person" as one who has a physical or mental impairment that substantially limits one or more major life activities, who has been classified as having such an impairment; or who is regarded as having an impairment. Most colleges and universities refer to this definition alone in eligibility consideration; however, the government's description of a handicapped person does not address all eligibility issues that should be included in an institution's eligibility policy. Eligibility issues not addressed in the regulations include, for example, a determination of whether temporary impairments such as broken legs are covered by the regulations, whether foreign students are eligible, or whether section 504 covers persons whose handicaps could be artificially corrected but who refuse the correction, e.g., hearing-impaired persons who decline use of a hearing aid (see appendix C). An eligibility policy should also include verification procedures.

That eligibility is extended to "qualified" handicapped students implies that such handicapped students must meet all academic and technical requirements of an academic program. Institutions must use admissions and catalog materials to identify, document, and publicize all essential academic and technical requirements for prospective students. Any doubts about a prospective student's ability to satisfy these requirements should be settled by an evaluation of his/her abilities and the importance of the requirement to the program.

Evaluating a student's ability to meet academic and technical requirements should involve a consideration of necessary auxiliary aids and/or services. (Auxiliary aids include readers for the blind, sign language interpreters for the deaf, and note takers.) Such a consideration should be based on an auxiliary-aids policy that contains a statement of the degree of institutional responsibility for providing aids, a statement of student responsibility for self-help, a process for identifying a variety of accommodation options, and a set of criteria for selecting the most appropriate accommodation (see appendix B).

3: Integrating an Institutional Accessibility Philosophy into the Planning and Budgeting Process

The primary purpose of incorporating accessibility considerations into the planning process is to insure the most effective use of personnel, materials, equipment, and space as the institution accommodates handicapped students. Many institutions have not done this but have encouraged an "ad hoc" approach by delegating all responsibility to special committees or to a mid-level staff person who has little control over academic, student service, or physical plant policies or activities. In such a situation, institutions can expect inefficient allocation of resources.

This chapter addresses the problem of insufficient senior-level administrative commitment to accessibility

and outlines desirable levels of participation. The chapter also identifies critical points in the planning cycle where accessibility considerations should be addressed.

Role of Senior Administrators in Assimilating Accessibility Considerations into the Policy and Planning Process

Proper assimilation of accessibility considerations into the institution's planning and budgeting can be achieved only through involvement of senior-level management. This should include executive support for insuring institutional accessibility, the selection of a senior program officer to direct and coordinate the assimilation effort, and the assignment to program administrators of specific responsibilities for implementing the accessibility philosophy in their own areas. To aid administrators in planning accessibility programs, the task force has prepared the following role descriptions for each executive participant in the implementation process.

Role of the Chief Executive Officer

- To assign to senior program officers development of an accessibility philosophy and goal (see figure 13).
- To delegate authority to one senior administrator to direct and coordinate the incorporation of accessibility issues into existing policy development and planning processes.
- To explain and define the institution's accessibility philosophy to concerned groups.
- To coordinate the development of an accessibility philosophy and incorporate it as a basic assumption in the planning process.
- To coordinate the development of activities and projects related to accessibility.

A visible presidential commitment to an accessibility philosophy can greatly help to insure that program areas coordinate efforts to achieve accessibility. Many faculty and staff view solid presidential support as evidence that the institution sincerely values accessibility.

Role of the Administrative Officer Responsible for Incorporating Accessibility Considerations into the Planning Process

The senior administrator to whom the president delegates authority should coordinate the efforts of all senior program officers in developing an accessibility philosophy. Once developed, the philosophy should be incorporated into annual planning assumptions (see figure 13). The administrator responsible for accessibility should also insure adequate communication between program areas and the physical plant department, help program units to identify accessibility issues in projects and activities (see figure 13), and assist those units in the implementation process (see figure 13).

Role of the Compliance Coordinator and Institutional Counsel

- To insure that all policy statements and positions comply with 504 regulations.
- To advise senior program officers of judicial decisions and changes in agency policies.

504 regulations state that an institution must designate a compliance coordinator to direct the self-evaluation process that was to be in place by June 1978 (see *Guide to Section 504 Self-Evaluation for Colleges and Universities*). In consultation with the university counsel, the coordinator's primary responsibility is to insure that the positions and policies taken by the institution are in compliance with 504 (see chapter 4 of this section) and that the institution has met all the technical, reporting, and other requirements of the act. The compliance coordinator should also oversee development or identification of a grievance mechanism that guarantees due process to individuals who have a 504 compliance complaint.

The compliance coordinator and university counsel should offer advice and comment to the senior program officers who are developing an accessibility philosophy and should provide information to policy committees that take positions on accessibility issues in areas such as admissions and curriculum requirements (see chapter 4 of this section).

Role of the Chief Business Officer

- To insure that modifications planned by the physical plant office have been coordinated with academic program policies and activities and with student service activities and needs.
- To insure adequate recordkeeping for services and expenditures related to accessibility.

In many instances the chief business officer controls the physical plant and physical planning departments and is thus responsible for completing any structural modifications that may be necessary to achieve program accessibility. This officer must have a clear understanding of actions taken by the academic and student service areas to accommodate students, as those actions can affect the need for specific physical plant modifications (see figure 13).

Business officers are also ultimately responsible for accurate accounting of expenditures from funds appropriated for accessibility. The chief business officer must insure that adequate controls and accounting procedures are in place to effectively monitor the acquisition, allocation, and expenditure of funds (see figure 13).

Role of the Chief Academic Officer

- To direct admission and curriculum committees to identify "essential" technical requirements.
- To coordinate with student service units and the physical plant department all accessibility initiatives originating in the academic area.

The chief academic officer is ultimately responsible for the development of academic and technical standards for admission to, or participation in, all academic programs. The officer must insure that all academic departments document "essential" requirements and incorporate them into existing policies (see figure 13 below, and step 1, page 24).

The chief academic officer must also see that all academic units coordinate initiatives with student service units and the physical plant department (see figure 13).

Role of the Student Services Officer

- To insure coordination of all student affairs accessibility initiatives.
- To insure that the financial aid office communicates with the business office in developing revenue projections.

The student services officer is often responsible for many support services and activities that affect handicapped students. These may include financial aid, athletics, counseling, health services, student organizations such as sororities or clubs, and a handicapped student services office. It is extremely important to have a strong communication link to academic units and to the physical plant department. The activities of the handicapped student services office must closely reflect the institution's accommodation and accessibility philosophy and must be coordinated with the activities of the compliance officer and other departments.

The senior student services officer should insure that all policies and accessibility initiatives developed or carried out by student services units are disseminated or communicated to other senior program officers (see figure 13). For example, if he/she controls the student aid office, he/she should be certain that the financial aid officer communicates with the business officer in developing revenue projections, since financial aid and vocational rehabilitation monies can also play a large part in paying for accessibility (see figure 13).

Incorporating Accessibility Considerations into the Institution's Planning Process

Institutional planning cycles generally consist of basic steps that include:

A. Development of planning assumptions by senior program officers.
B. Review of existing policies, activities, and projects by academic, student services, and facilities departments.
C. Assessment of budget requests.
D. Administrative review and approval.
E. Budget allocation and project implementation.

Figure 13 illustrates these steps in the planning cycle and describes accessibility considerations for each of them.

Development of Planning Assumptions by Senior Program Officers

The accessibility philosophy should articulate the institution's commitment to accommodating handicapped students. It should be simple, clear, and direct, and should identify goals that can be expressed in terms of annual objectives.

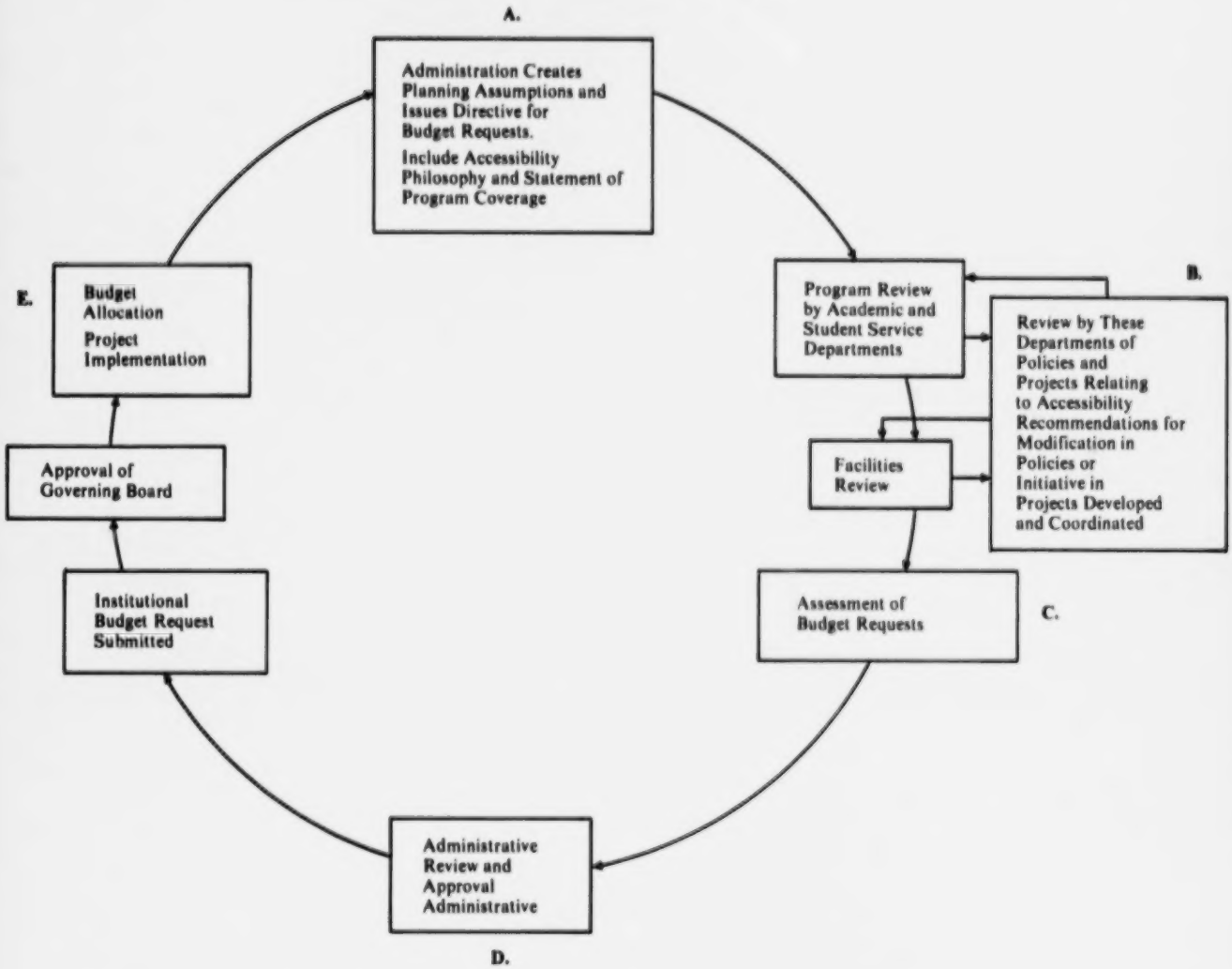
The importance of an accessibility philosophy lies not only with its immediate influence on individual accommodation decisions, but also with the long-term effect it could have on other institutional policies, programs, capital plans, and recruiting and admissions procedures. It is also possible that creation of new administrative structures would be implied by the accessibility philosophy. Thus this philosophy should be carefully developed and well-publicized.

The chief executive officer should designate a senior administrator to coordinate the development of an accessibility philosophy. The officer, with other executive-level program officers, should weigh the following factors in developing an accessibility philosophy:

Internal Assumptions	*External Assumptions*
• Current status of campus as reflected in 504 Self-Evaluation and Transition Plans.	• State or system policies on accommodating the handicapped.
• Institutional mission statement, general institutional purpose, orientation and expections of students.	• Analysis of approaches that other institutions in the area are taking toward accommodating the handicapped.
• Size and complexity of academic support programs.	• Type and availability of funding for accommodating students.
• Types of students attending institution and their purpose in attending institution.	• The likelihood of changes in the number of handicapped that may be attending an institution because of demographic changes or changes in primary or secondary educational programs.
• Institutional definition of reasonable self-help.	

The site-visit team found three general categories of philosophies. These categories (described below) represent distinct institutional responses to the section 504 mandate. An institution that adopts any of the three may or may not also be in compliance with the law. It is important to remember that many factors other than philosophy must be examined to determine compliance.

Figure 13: Planning and Budgeting Sequence


A.
Administration Creates Planning Assumptions and Issues Directive for Budget Requests.
Include Accessibility Philosophy and Statement of Program Coverage
B.
Program Review by Academic and Student Service Departments
Review by These Departments of Policies and Projects Relating to Accessibility Recommendations for Modification in Policies or Initiative in Projects Developed and Coordinated
Facilities Review
C.
Assessment of Budget Requests
D.
Administrative Review and Approval Administrative
Institutional Budget Request Submitted
Approval of Governing Board
E.
Budget Allocation
Project Implementation

(Chapter 4 of this section contains a more thorough treatment of compliance.)

Nondiscrimination

The following is a statement of a nondiscrimination philosophy:

> "Each qualified student, regardless of race, sex, or handicap, shall have an equal opportunity to meet the academic and technical standards of all institutional programs. This institution shall provide accommodations to allow qualified handicapped students to achieve such performance standards."

A nondiscrimination philosophy would generally give to the handicapped student the responsibility for identifying needed accommodations. The institution subscribing to the philosophy would make little, if any, effort to identify and assist handicapped students, but would provide accommodations necessary to give handicapped students an equal chance to meet existing performance standards.

This philosophy holds that an institution will be neutral in relation to the handicapping condition of a student. The goal of a nondiscrimination philosophy is neither to encourage nor discourage handicapped participation in institutional programs but to provide equal opportunity to participate.

Of the institutions visited, three expressed some form of nondiscrimination philosophy. These institutions had a smaller number of handicapped students than the

others visited, either because these institutions were not specifically recruiting handicapped students or because they were counting as handicapped only those students who requested some form of accommodation. Staff assigned to assist handicapped students were charged with responding to students' expressed needs rather than with developing outreach programs.

Affirmative Action

The following is a general statement of an affirmative action philosophy:

> "The institution is committed to providing higher education opportunities for all students and to increasing the representation of persons with disabilities in its student enrollment. The institution shall strive to make its programs, activities, and facilities as accessible as possible to handicapped students."

An affirmative action philosophy reflects a commitment to encouraging the participation of handicapped students in an institution's programs. Goals for an affirmative action philosophy could include identifying and achieving target participation rates for those programs.

With an affirmative action philosophy, institutions would actively identify and recruit handicapped students. The commitment to encourage participation and provide accommodations would be well-publicized.

Of the institutions visited, two had affirmative action philosophies and actively recruited handicapped students. They undertook initiatives to identify handicapped students after admission and any accommodations that were needed. These institutions had more special staff and more handicapped students than institutions articulating a nondiscrimination philosophy.

Rehabilitation Philosophy

The following is a general statement of a rehabilitation philosophy:

> "The institution is committed to increasing the enrollment of handicapped students and to providing a barrier-free educational environment whenever possible. To reach this goal, the institution is committed not only to recruiting qualified handicapped students but also to identifying disabled persons who might become qualified through rehabilitation programs offered by the school."

A rehabilitation philosophy commits an institution to helping handicapped students overcome their disabilities, if possible. The goal of the philosophy is to provide any services, equipment, and programs that contribute to the rehabilitation of handicapped students and to achieve a model physical environment for those students. Accommodation and the provision of special educational services are ends rather than simply means of facilitating participation in general programs.

Institutions expressing rehabilitation philosophies anticipate that handicapped students will constitute a special target section of the student population to which special services will be provided. Such services will require special staffs and budget allocations, and the institutions may advertise the services in an effort to attract large numbers of handicapped students.

Of the institutions visited, one had a philosophy of rehabilitation for accommodating handicapped students. Of all the site-visit institutions, its handicapped students were the largest percentage of enrollment (8 percent).

Statement of Program Coverage

Executive program officers, with the advice of the institution's compliance coordinator and the university counsel, should develop a statement that identifies the institutional programs or activities covered by section 504.

Section 504 applies only to programs or activities that receive federal financial assistance. The regulations, first published by HEW and now enforced by the Department of Education, extend coverage of 504 to "each program or activity that receives *or benefits from* (federal financial) assistance" (emphasis added). A number of colleges have challenged the scope of Title IX of the Education Amendments of 1972 and Title VI of the Civil Rights Act of 1964, both of which, like 504, apply to federally assisted programs. The legal issues raised in these cases, e.g., whether employment is covered by Title IX and whether student aid constitutes federal assistance to the institution, may apply by analogy to decide similar issues under 504. In developing a statement of program coverage, institutions may wish to review these cases and the issues they raise.

Other than these broad jurisdictional issues, institutions should recognize and address several other program coverage issues identified by the 504 regulations. First, the regulations prohibit discrimination on the basis of handicap by any organization or individual providing student services under contract from the institution. An organization that contracts to provide food services to students, for example, is subject to the same program accessibility requirements that would be applicable if the institution was providing the services directly. Second, the regulations state that if an institution considers education programs or activities not operated wholly by the institution as a part of, or equivalent to, its programs, the institution must assure itself that the "outside" education program, " as a whole," provides an equal opportunity for participation

by handicapped persons. This means, for example, that an externship program must include adequate opportunities for handicapped students, even if every placement is not available to students with disabilities. Third, the 504 regulations prohibit a college receiving federal aid from giving "significant assistance" to any agency, person, or organization that discriminates on the basis of handicap in providing aid, benefits, or services to the college's students. Thus, if the institution gives a social fraternity "significant" financial, administrative, or other assistance, the institution would have to require the fraternity to comply with section 504 or to forego further institutional aid, even if such a fraternity is not considered part of the institution's education program. Finally, to the extent the institution assists an outside person or organization in making housing or employment opportunities available to students, the institution must assure itself that the opportunities are, "as a whole," made available to handicapped students in a nondiscriminatory manner.

The task force believes it is important for each institution to identify the activities that fall within the "program accessibility" mandate of the regulations and those that fall within the "as a whole" standard. Legal advice is necessary in making this judgment, particularly since the Office for Civil Rights has not yet provided a definition of "significant assistance."

Review of Existing Policies, Activities, and Projects by Academic, Student Services, and Facilities Departments

Institutional accessibility requires an assessment of policies governing admission to or participation in various departments and/or activities. The assessment is extremely important and should be undertaken by the respective departmental policy-making bodies. Without this process it is impossible to make valid determinations of student qualifications or of the appropriateness of accommodations requested by students. This policy review process is discussed more thoroughly in step 1, page 24.

Before budgets are finalized, proposed projects relating to accessibility should be widely circulated in draft form. Such projects could include faculty seminars, creation of a guide to accessible buildings, or the physical modification of a campus structure. This process of review by appropriate individuals in academic, student services, and physical plant departments and by the institution's compliance coordinator is necessary if departments are to make proper accessibility decisions. For example, a physical plant department's plans to install an elevator in a building should be circulated to the security office (because an elevator will affect fire and safety precautions); to academic departments (because classes are scheduled in the building); to student service personnel (who facilitate scheduling, registration, and other needs of the handicapped); and finally, to the compliance officer (to insure that the plans meet all applicable program and physical specifications). Once responses are received from the various departments, final plans and budget for the elevator could be developed. The result of this broad review might be a decision that full program accessibility could be achieved by making only the first floor of the building accessible. This would obviously benefit the institution as well as the final budget for the project.

Assessment of Budget Requests

To accommodate handicapped students properly, institutions must be able to identify funding sources that can directly support handicapped students as well as those that can help the institution to pay for the process of accommodation. Institutions should estimate the amount of potential funding available from each source and identify the use restrictions on each type of funding. To accomplish this, the financial aid officer should work with other personnel in identifying sources that provide aid to handicapped students, and the business officer should coordinate efforts to identify funding sources for the institution. In some organizational structures, the financial aid office is under the jurisdiction of the business officer; this facilitates communication between the two offices. When the student aid office is under the direction of other officers, adequate communication must be assured.

Sources of Funding for Handicapped Students

A variety of federal, state, local, and private organizations and agencies provide funds for the personal and educational needs of handicapped students. Examples of such sources are:

Federal
- Social Security Administration
- Veterans Administration
- Title IV funds (student aid)
- Special Programs for Students from Disadvantaged Backgrounds

State
- State vocational rehabilitation agencies
- State agencies for the blind, deaf, or other handicapped groups

Private
- Nonprofit organizations, such as Lighthouse for the Blind
- Various corporate foundations
- Local civic groups, such as Lions Clubs

Institutional officials should be aware of the different eligibility criteria for various funds, particularly federal

or state vocational rehabilitation funds. These criteria generally fall into four categories.

1. "Similar Benefits" provisions: If another source of funds for services is provided by vocational rehabilitation agencies, the similar benefits provision of the federal Rehabilitation Act requires the client (handicapped student) to first obtain those benefits from the other source. The Rehabilitation Services Administration has asserted that 504 requires colleges to provide rehabilitation services such as auxiliary aids and that the similar benefits provision, therefore, prohibits state vocational rehabilitation agencies from paying for such aids for college students. This interpretation was recently rejected by a federal district judge in *Jones v. Illinois Department of Rehabilitation Services and the Illinois Institute of Technology, et. al* (Civil Action No. 79-C-5396; N.D. Ill., January 15, 1981.).
2. Needs test: The student may be required to demonstrate need of financial assistance to pay for services. For example, the federal Rehabilitation Act permits states to impose need requirements on recipients of vocational rehabilitation funds.
3. Residence requirements: The student may be asked to satisfy a set of minimum residence requirements.
4. Academic and vocational requirements: The student may be required to meet standards for job relatedness, number of credit hours, undergraduate status, or entry-level job aspirations.

Because of these criteria and the differences in award periods, the first step toward deciding how costs will be met is to identify the total educational cost for each handicapped student. Determination of student budgets for handicapped students and the actual packaging of aid sources should be done in the financial aid office.

To facilitate the packaging process, some states have developed agreements between state offices of vocational rehabilitation and institutional financial aid officers. An example of such an agreement is contained in appendix A.

Sources of Funds Available Through the Institution

To collect information about the sources and uses of accessibility funds channeled through the institution, the task force developed a source/use survey that was sent to a sample of NACUBO members. (Readers should refer to section III for a more complete discussion of the results.) Generally, the task force found that most of the funds institutions were spending on 504 compliance came from regular budget monies awarded for special needs. Some state schools, however, reported receiving special subsidies from state governments. Most of this state money was provided for facilities modification rather than for programs. Much smaller allocations of federal dollars, from programs such as CETA or college workstudy, were used to pay for staff services for handicapped students.

Three characteristics of funding sources should be considered by budget planners.

1. Availability: Is the resource available when needed, or is it provided in an untimely or inconsistent manner? What are the potential effects of availability problems on the institution?
2. Applicability: Is this resource applicable to the accommodation objectives of many handicapped students or of just a few? For example, are funding sources for accommodations for learning-disabled students applicable to the needs of mobility-impaired students? Rules and regulations for use of

Figure 14: Accommodation Monies

SOURCE / USE	Federal Restricted		Federal Unrestricted		State Restricted		State Unrestricted		Institutional Endowment	Institutional Operating Budget	Institutional Capital Budget	Private Gifts
Status	Soft	Hard	Soft	Hard	Soft	Hard	Soft	Hard				
Construction & Renovation												
Maintenance												
Salaries												
Auxiliary Aids												
Total-Soft												
Total-Hard												

various monies may also contradict institutional policies.

3. Stability: Is the resource a special, one-time grant? Will the program be able to continue after external funding ends?

Business officers should develop adequate accounting and recordkeeping procedures to track all monies allocated to the institution. This tracking process should include a determination of whether funds are capital or operating, of whether they are restricted or nonrestricted, and of the stability of the funding. A general source/use table (figure 14 above) for accessibility monies has been designed to assist managers in identifying sources and specified uses of accessibility monies for each fiscal year.

Development of Departmental Budgets

Budgeting for accommodation expenditures entails estimating expenditures for a given time period and matching needs to revenue projections. Some accommodation expenditures can be estimated accurately by departments as they develop strategies to achieve annual accessibility objectives. However, the unpredictable nature of accommodation requests necessitates the development of a projected budget allocation to handle such expenses. To facilitate an accurate cost estimate, the institution must provide departments with some information about previous demands and costs, changes in numbers of handicapped students served, and inflation. Following are some examples of direct costs for accessibility that should be factored into this analysis.

- *Special facilities* cost, such as expenditures for space, equipment, or furniture acquired or modified for use by a handicapped student or students.
- *Special materials* cost, such as expenditures for instructional material or devices specifically developed or purchased to assist students in the learning process.
- *Educational assistance* costs, such as expenditures for individuals employed to assist handicapped students in obtaining or using educational services (e.g., readers for the blind, interpreters for the deaf, and other auxiliary aides).
- *Transportation* costs, such as expenditures for persons, equipment modifications, or related costs of accommodating handicapped students in *existing* transportation programs (e.g., specially equipped campus buses).
- *Program development services* costs, such as expenditures to assist staff in developing programs for handicapped students and in addressing other accessibility issues.

These projections should be referred to the business office so that the needs analysis can be matched with anticipated resources. In many instances, expenditure projections for both anticipated and unanticipated accommodations expenditures will exceed projected resources. In such instances, the business officer and the appropriate program officer should modify the budget request.

The task force observed in its six site visits that institutions that funded accommodation expenses from institutional rather than departmental funds had greater success in enlisting departmental faculty and administrators in 504 compliance efforts. Greater enthusiasm by departmental personnel had a beneficial effect on the institution's overall compliance posture.

Administrative Review and Approval

After departments have prepared preliminary plans and budgets, they submit them to an institutional planning committee composed of executive program officers. It is the function of this group to review specific requests in light of the institution's program goals and resource projections, to compare the requests with those of other departments, and then to establish priorities for budget allocations. Such a process usually requires several weeks, during which meetings and hearings are held to discuss specific requests.

An integral part of the review process is input from handicapped advocacy groups, faculty advisory committees, and other interested parties. These groups can provide information and comments about proposed activities and projects relating to accessibility. Institutions may wish to continue for this purpose the life of the committees that wrote the self-evaluation plans.

The final decision on expenditures for accessibility, however, is vested in the planning committee whose recommendations are sent to the board of trustees or the appropriate state system office. In reaching a decision on which activities and projects should be undertaken to achieve accessibility, the budget planning committee should consider the following criteria.

- What is the specific objective of the activity or project?
- Is that objective consistent with the institution's general approach to accessibility as stated in the accessibility philosophy?
- Is there only one method for achieving the intended objective? If not, what are the alternatives? Are they equally effective and efficient?
- Can any of the proposed activities and projects be "piggybacked" on others (e.g., renovation that com-

bines OSHA and section 504 with energy conservation and deferred maintenance)?

- Does the activity or project in any way set an undesirable precedent?
- Have "hidden" cost factors, such as maintenance or administrative overhead, been adequately considered?
- Is the workplan for the activity or project timely, reasonable, and cost effective? Does it inappropriately drain personnel from other priority activities?
- Have all designs for structural modifications been checked for adherence to state and federal building codes for accessibility? Have the designs been reviewed by persons (particularly handicapped persons) knowledgeable about nuances that might cause difficulty for the handicapped?

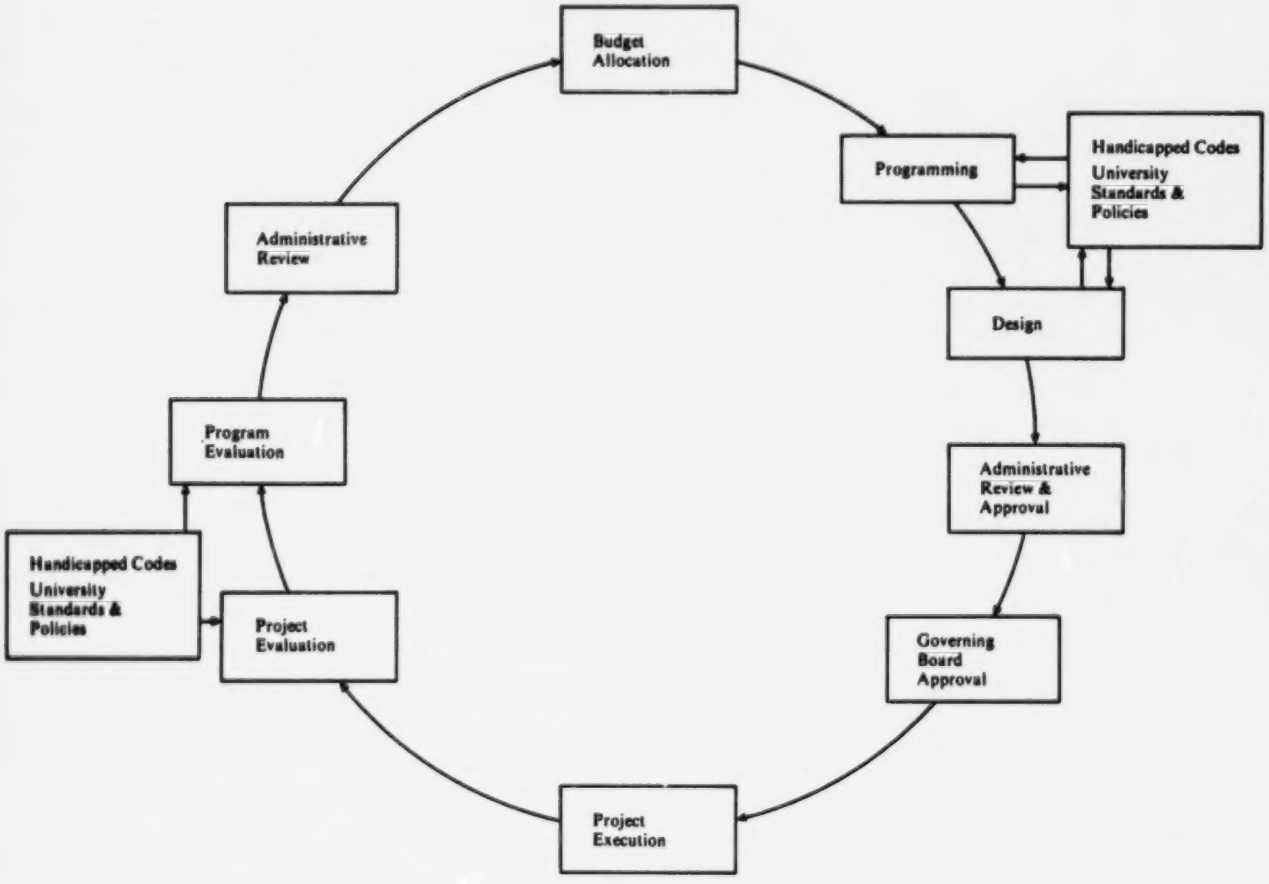
Budget Allocation and Project Implementation

Once budget allocations have been disbursed to program and physical plant departments, it is important to coordinate three phases of project implementation.

- Development of program, project workplans, and designs for the modification of various structures
- Project execution.
- Project evaluation.

Figure 15 illustrates a general implementation sequence that incorporates the coordination of academic, student service, and physical plant efforts.

Figure 15: Project Implementation Sequence



4: Operating Policies and Guidelines

At this writing, the task force interprets section 504 to mean that every institution subject to the provisions must review on an individual basis each handicapped student's request for an accommodation. Most colleges and universities carry out such reviews, but few address accommodation requests through a formal decision process constructed around policies on student eligibility, student qualification, most appropriate accommodations, and accommodation implementation. Many institutions simply base accommodation decisions on the ad hoc or subjective judgments of individual faculty and staff. The consequence of this approach is that judgments tend to be uncoordinated and without a firm policy base. Institutions using this approach often fail to consider certain immediate compliance ramifications and can set potentially undesirable precedents (particularly from a financial perspective) for future accommodation decisions.

The purpose of this chapter is to introduce a general five-step guide for assessing accommodation requests and to identify the policies that an institution should develop as a basis for each of the five decisions. The task force developed this guide by isolating in sequence each decision required to accommodate students effectively. It then prepared discussions of pertinent issues for consideration in developing accommodation policies. The policy decisions and the sequence of those decisions are based on the task force's best judgment of current judicial and agency interpretations of the 504 legislation and regulations. These interpretations are always subject to change, and many still require clarification. Therefore, institutions must seek the advice of legal counsel in developing policies and should periodically review these policies in light of regulatory changes.

Five-Step Guideline for Assessing Specific Accommodation Requests

The process of evaluating accommodation requests in the most effective, efficient, and consistent manner is built around five sequential decisions.

Step 1: Identify and assess the academic and technical standards students must meet to gain admission to or to participate in the institution's academic programs.

Step 2: Determine the student's eligibility for accommodation.

Step 3: Determine if the handicapped student is otherwise qualified to be admitted to or to participate in an academic program.

Step 4: Determine appropriate accommodation option for handicapped student and identify sources of funds.

Step 5: Implement accommodation.

Figure 16 was designed to illustrate the sequence of decisions and the various options the decision maker has at each decision point.

Step 1: *Identify and Assess the Academic and Technical Standards Students Must Meet to Gain Admission to or to Participate in an Academic Program.*

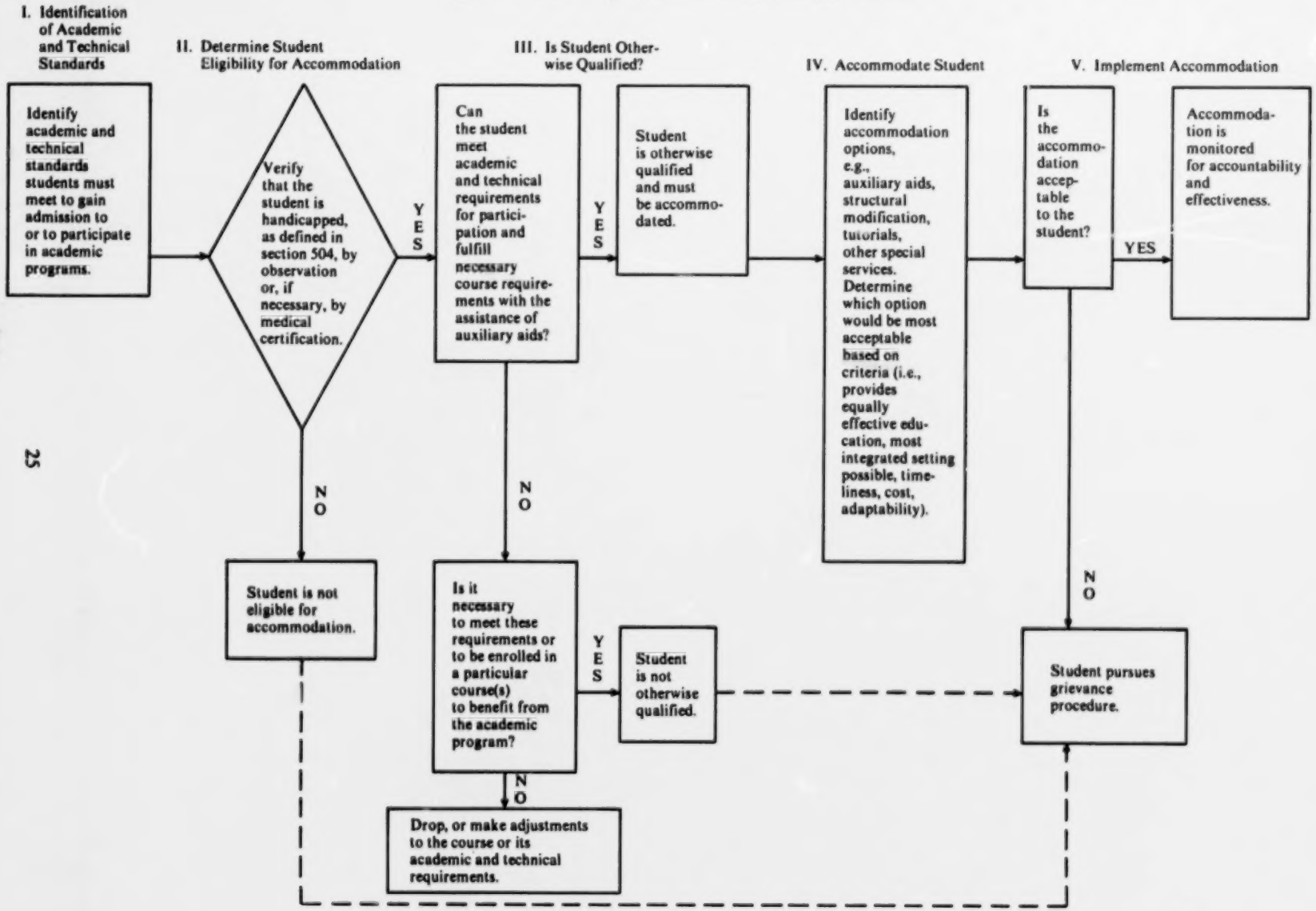
The importance of identifying *both* explicit and implicit technical standards for admission to and participation in an academic program cannot be overstated. It is impossible to proceed with determinations of student qualifications (step 3) and selection of appropriate accommodation options (step 4) without this framework.

The prohibition of preadmission inquiries into the handicapped status of applicants reinforces the need for examination of technical requirements; because of the prohibition it becomes all the more important to publicize required technical standards in admissions literature so that potential students are aware of *all* academic and technical requirements. The general counsel of the former Department of Health, Education, and Welfare agreed with this premise, stating ". . . a college or university may require that an applicant for admission to a program of instruction be physically able to perform specified functions necessary for participation in the essential aspects of the program. An educational institution may (therefore) make preadmission inquiries about essential functional abilities, but not handicapped status. . ."* This means, for example, that an institution may not ask a potential engineering student if he/she has a handicap, but it may require that the student demonstrate the functional ability to complete surveying courses, in cases where the institution has determined that surveying courses are an *essential* part of its engineering program.

The task force emphasizes that institutions may not use technical requirements arbitrarily to restrict admission of handicapped students. Technical standards should be evaluated and established by the same policy group that determines the academic standards for the program. The task force agrees that, while there is no prescriptive formula for determining the "essentialness" of a particular academic or technical requirement, there are certain criteria that clearly can be considered in making such determinations.

*The general counsel made this statement in a letter written at the secretary of HEW's request in response to inquiries made by the American Council on Education about the Supreme Court's decision in the *Southeastern Community College v. Davis* case. Letter from Joan Z. Bernstein, general counsel, DHEW, to R. Claire Guthrie, assistant general counsel, ACE, December 3, 1979.

Figure 16: Decision Process for Accommodating Handicapped Students


I. Identification of Academic and Technical Standards
II. Determine Student Eligibility for Accommodation
III. Is Student Otherwise Qualified?
IV. Accommodate Student
V. Implement Accommodation
Identify academic and technical standards students must meet to gain admission to or to participate in academic programs.
Verify that the student is handicapped, as defined in section 504, by observation or, if necessary, by medical certification.
YES
NO
Can the student meet academic and technical requirements for participation and fulfill necessary course requirements with the assistance of auxiliary aids?
YES
NO
Student is otherwise qualified and must be accommodated.
Identify accommodation options, e.g., auxiliary aids, structural modification, tutorials, other special services. Determine which option would be most acceptable based on criteria (i.e., provides equally effective education, most integrated setting possible, timeliness, cost, adaptability).
Is the accommodation acceptable to the student?
YES
NO
Accommodation is monitored for accountability and effectiveness.
Student is not eligible for accommodation.
Is it necessary to meet these requirements or to be enrolled in a particular course(s) to benefit from the academic program?
YES
NO
Student is not otherwise qualified.
Drop, or make adjustments to the course or its academic and technical requirements.
Student pursues grievance procedure.

- The deletion or alteration of the technical requirement would fundamentally alter the content and/or the quality of the program.
- Accreditation requirements.
- The academic philosophy of the institution, e.g., emphasis on job training, verbal versus written language skills.
- Standards set by professional associations, e.g., National Academy of Sciences, American Chemical Society, American Medical Association.
- Licensing requirement.
- Curriculum (number of hours required per subject, electives policies).

The task force emphasizes that the process of developing and understanding the "essentialness" of technical requirements must be dynamic, that is, it must be subject to periodic examination. Appropriate academic and technical standards evolve only after they have been reexamined each time a question of student qualification is raised in step 3.

Step 2: *Determine Student Eligibility for Accommodation.*

A determination of eligibility to receive the benefits of section 504 should be based on the definition contained in the federal regulations (see below). While this definition is very broad, it does not specifically address such questions as temporary disabilities, foreign students, artifically corrected handicaps, or enrollment status of students (part-time versus full-time, credit versus noncredit). The task force addressed these issues in their publication *"Issues and Answers for Implementing Section 504."* While these positions are those of the task force and have not been officially accepted by the Office for Civil Rights, they may offer some assistance to the institution that is making a determination of eligibility (see appendix C).

Section 504 defines a "handicapped person" as one who:

A. Has a physical or mental impairment that substantially limits one or more major life activities (functions such as caring for one's self, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning, and working).

Only physical and mental handicaps are included. Thus, environmental, cultural, and economic disadvantages are not in themselves covered, nor are prison records, age, or homosexuality. Of course, if a person has any of these characteristics and also has a physical or mental handicap, he or she is included within the definition of "handicapped person." "Physical or mental impairment" is defined as:

- Any physiological disorder or condition, cosmetic disfigurement, or anatomical loss affecting one or more of the following body systems: neurological; musculoskeletal; special sense organs; respiratory, including speech organs; cardiovascular; reproductive; digestive; genito-urinary; hemic and lymphatic; skin; or endocrine. And
- Any mental or psychological disorder, such as mental retardation, organic brain syndrome, emotional or mental illness, and specific learning disabilities.

It should be emphasized that a physical or mental impairment does not constitute a handicap for the purposes of section 504 unless its severity is such that it results in a substantial limitation of one or more major life activities. The term "physical or mental impairment" is not defined completely by the listing of specific diseases and conditions because it is difficult to insure the comprehensiveness of such a list. However, this term is intended to encompass diseases and conditions such as orthopedic, visual, speech, and hearing impairments; cerebral palsy; epilepsy; muscular dystrophy; multiple sclerosis; cancer; heart disease; diabetes; mental retardation; emotional illness; and drug addiction and alcoholism. "Specific learning disabilities" are included in the definition of "mental impairment"; the term is intended to describe conditions such as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. In higher education, generally, learning disabilities and emotional illness are seen more frequently than mental retardation. Most mentally retarded students do not meet academic standards for admission.

B. Has a record of such an impairment (has a history of, or has been classified as having, a mental or physical impairment that substantially limits one or more major life activities).

Protected from discrimination under section 504 are persons who have a history of a handicapping condition (e.g., mental or emotional illness, heart disease, cancer) but who no longer have the condition, and persons who have been incorrectly classified as having such a condition (e.g., a student erroneously classified as mentally retarded and later reclassified as "normal").

C. Is regarded as having such an impairment. A person may be included in this definition if he/she:

- Has a physical or mental impairment that does not substantially limit major life activities, but is treated as though such a limitation exists.
- Has a physical or mental impairment that substantially limits major life activities only as a result of the attitudes of others toward such an impairment.

- Has none of the impairments defined under physical or mental impairment, but is treated by the institution as having such an impairment.

The above definition includes persons ordinarily considered handicapped but who do not fall within the first two parts of the statutory definition (e.g., persons with a limp who are not substantially limited but are regarded as handicapped). This part of the definition also includes some persons who might *not* ordinarily be considered handicapped, such as persons with disfiguring scars or persons who have no impairment but are treated as if they are handicapped.

Verification of Handicapped Status

In many instances, an institutional official is able to verify handicapped status visually, but in some cases (learning disability or hidden medical condition such as diabetes, for example) the handicap or its implications are not obvious, and the institution may wish to have professional documentation of the existence of a handicap. States that provide funding on a per-student basis often require a formal verification process for each student receiving funding.

Step 3: *Determine if the Handicapped Student is Otherwise Qualified to be Admitted to Participate in an Academic Program.*

To establish a student's qualifications for admission to or participation in academic programs, it is necessary to evaluate that student's ability to perform the "essential academic and technical requirements" identified in step 1.

If the student is able to perform these requirements with the assistance of an aid, benefit, or service as defined in the regulation, then that student is qualified to participate in the program. "Aids, benefits, or services" could be tapes or texts, interpreters, or other effective methods of making orally delivered materials available to students with hearing impairments, readers in libraries for students with visual impairments, classroom equipment adapted for use by students with manual impairments, and other similar services and actions, which allow him/her to receive an equally effective education (as determined by the institution).

Institutions should note that the regulations also identify those aids, services, and benefits that the institution is not required to provide to enable a student to participate (e.g., attendants, individually prescribed devices, readers for personal use or study, or other personal devices or services).

Many questions about the types of auxiliary aids, services, and benefits that must be provided to handicapped students remain unresolved. For example, distictions between personal and education-related aids remain blurred, and individualized supervision by faculty or teaching assistants often overlaps attendant service. Administrators should be well informed regarding any pending court cases or agency policy statements that clarify these issues. A sample institutional statement of policy on providing auxiliary assistance to handicapped students has been included to assist officials in developing their own statements (see appendix B).

If the student is still unable to meet academic and technical requirements with the assistance of aids, services, and benefits, the institution must reexamine the requirement and its "essential contribution" to the nature of the program. The basis of this reexamination should be a judgment of whether the essential nature of the program would suffer a "fundamental alteration" if the requirement was deleted or modified. (The expense or inconvenience of altering the program should not be a factor in this determination.) If altering or deleting the requirement for a student fundamentally alters the nature of the program, the student is not qualified to participate in the program.

Step 4: *Accommodating the Handicapped Student.*

The task force determined that an accommodation procedure must address three tasks to be effective and efficient: identification of all appropriate options, evaluation of those options based on selection criteria, and assembling of an appropriate funding package.

Identifying Appropriate Accommodation Options

Creativity and flexibility are keys in the process of identifying all options for accommodating a specific request for assistance. Creativity is threatened if requests are grouped or if accommodation responses are standardized according to type of handicap. For example, it would be very inefficient and unnecessarily expensive to automatically give all visually impaired students reader services if some of those students could use magnifying equipment. To facilitate the identification of accommodation options, the task force supervised the development of an assistive devices directory indexed by functional impairment and academic program area. The directory includes appendixes that list clearinghouses and other sources of information. (Many institutions are currently using college workstudy and CETA funds to provide readers and other services to the disabled.)

Evaluating Accommodation Options

When possibilities for accommodating a student have been identified, it is the institution's responsibility, with the advice of the handicapped student, to determine which accommodation objective is most appropriate. Two evaluation criteria are identified in the regulations

and must receive priority consideration in an evaluation: 1) Does the accommodation provide an equally effective education? and 2) Does it allow the student to participate in the most integrated setting possible?

Criterion 1: Equally Effective Education

To be equally effective, the equipment, benefit, or service need not produce an identical result; rather, it must afford an equal opportunity to achieve equal results or to gain an equivalent benefit and allow the student to reach the same level of achievement as nonhandicapped students.

Criterion 2: Integrated Setting

Students should not be unduly segregated, separated, or treated differently and must be included in the institution's existing programs and activities to the maximum extent possible. An institution may justify separate programs only when they are deemed necessary to allow a student the same level of achievement as nonhandicapped students.

Once these criteria have been satisfied, institutions should consider factors such as timeliness, maintenance, administrative supervision, and cost. Because section 504 regulations contain no exemption from providing auxiliary aids that create undue financial hardship on institutions, officials may not deny selection of an auxiliary aid because of cost alone. Institutions should identify and select those accommodations that provide the student with an equally effective education.

Funding Specific Accommodation Requests

Chapter 3 of this section indicated that funding for accommodations can either be channeled through the institution or received directly by the student; it also stressed the need to monitor and coordinate these monies to allow the greatest flexibility in packaging specific accommodations.

Ideally, all monies to which the student is entitled from various agencies should be packaged first in covering the cost of the auxiliary aid. Chapter 3 of this section discussed various sources for student support and described general eligibility criteria. Any additional funding needs can then be met with funds obtained by the institution. Coordination of this funding process should take place among the student, appropriate faculty and staff, and the financial aid and business officers.

Step 5: *Implementing the Accommodation.*

Once the institution has determined the accommodation, it should periodically monitor the progress of the student and, for required audit proceedings, report all significant expenses.

If the student finds the institution's decisions in steps 2, 3, or 4 unacceptable, he/she is entitled to appeal the institution's decision through an internal procedure established or designated for review of such matters. The 504 regulations require each institution that receives federal financial aid to "adopt grievance procedures that incorporate appropriate due process standards and that provide for the prompt and equitable resolution of complaints alleging any action prohibited by section 504 or the departmental rules."

A student complaining of inadequate accommodation of his/her handicap would be making an allegation of handicap discrimination that should be heard through the federally mandated grievance procedure. What constitutes "appropriate" due process in such procedures may vary from institution to institution and according to the nature of the complaint. (More formal procedures might be appropriate when the institution's decision results in complete exclusion from the institution or a degree program.) Although the Office for Civil Rights has suggested that 504 grievance procedures must in every case allow complainants the full range of procedural rights normally given students involved in quasi-criminal disciplinary hearings at state universities, the task force believes the process that is "due" in discrimination complaint hearings will normally be more analogous to the procedural rights given students in academic dismissal cases.

The task force believes the following general guidelines should be followed in developing a 504 grievance procedure. The standards that the student is required to meet to be eligible for or to obtain an accommodation should be clear. The student should be afforded an opportunity in a nonadversarial setting to present information he/she believes is relevant to any review of his/her complaint. The student should be given an opportunity to respond to any information presented by the institution regarding its decision. The person or persons hearing the complaint should keep a record (verbatim or summary) of the information presented, and the resolution of the complaint should be based on that record.

The grievance procedure adopted by an institution should result in a resolution of the controversy in a reasonable period of time. The procedure should be reviewed by legal counsel before its adoption. To be avoided are procedural excesses (including, in the task force's view, the involvement of lawyers as representatives for either side). Such excesses encourage complainants and institutional representatives to think of the complaint resolution process as a game to be won by points scored on procedural technicalities.

Appendix A

Memorandum of Understanding
between
The Virginia Association of Student Financial Aid Administrators
and
The Virginia Departments of Rehabilitative Services and Visually Handicapped

This is not a contract. It is a professional agreement which recommends policies and procedures to be followed in serving common clients. [The following has been reproduced as submitted to NACUBO.]

Financial Aid Office (FAO)
and
The Departments of Rehabilitative Services (DRS)/
Visually Handicapped (DVH) Understandings

I. *Purpose*

The purpose of this understanding and procedures is to serve mutual clients specific needs, build a better communication mechanism, provide equality among mutual clients and assist in the prevention of institutional overawards.

II. *Understanding*

A. The Departments of Rehabilitative Services and Visually Handicapped agree to:

1. Ensure that clients apply for financial assistance using uniform application.
2. Continue to utilize the financial needs test for client financial eligibility as required by the Departments of Rehabilitative Services and Visually Handicapped policies but not to determine the amount of educational support to be authorized.
3. Accept the institutions uniform methodology and needs assessment for the student and not authorize above the need listed on the RS-25/BVR-30 unless justification is offered.
4. Not consider loan eligibility in its financial eligibility process. If clients are financially eligible for services from the Departments of Rehabilitative Services and Visually Handicapped, the rehabilitation counselor shall provide services rather than require the student to take a loan.
5. Determine if support services are needed and inform the Financial Aid Office. This process will allow the Financial Aid Office to increase the clients budget in order that the support services will not be computed as income.
6. Send to the institution the RS-25/BVR-30 at the time the student eligibility report (SER) is available to the student or concurrently with the SER attached.
7. Submit a mid-semester report to the FAO which lists the clients name and social security number.

B. The Financial Aid Office agrees to:

1. Identify single individual contacts at each educational institution for all Departments of Rehabilitative Services and Visually Handicapped communication and mutual client counseling.
2. Utilize the student need and aid assessment form (RS-25/BVR-30) and mid-semester award confirmation for all mutual clients.
3. Package its aid first as they do for any other individual, and provide the information to the Departments counselor.
4. Provide the Department of Rehabilitative Services supervising college counselor with a mid-semester report of clients who are overawarded and underawarded.

C. Both Financial Aid Office and Departments of Rehabilitative Services and Visually Handicapped agree to:

1. Make every effort to provide revision information to each other after original assessment and awards are made.
2. Satisfy student needs whenever possible within institutional and departmental guidelines and in conformity with Federal and State regulations.
3. Provide information to the State Council of Higher Education and the Virginia Student Financial Aid Association training activities. The Virginia Student Financial Aid Association agrees to provide training information

for Departments of Rehabilitative Services/ Visually Handicapped training activities.

4. Promote better communication and improvements in our mutual delivery system.

D. Procedures for forms:

1. The Departments of Rehabilitative Services and Visually Handicapped will provide to the Financial Aid Office the RS-25/BVR-30 with Part A completed.
2. The Financial Aid Office will complete Part B of this form and return to the Departments of Rehabilitative Services and Visually Handicapped within 10 working days or less. File copy will be retained by the Financial Aid Office. If the information is not available, an incompleted form will be returned to the counselor.
3. The Departments of Rehabilitative Services and Visually Handicapped will complete and submit to the Financial Aid Office this form with Part C completed in all cases. This is the Departments commitment and will be sent prior to or at the same time any authorization is sent to the business office of the institutions.
4. The Departments of Rehabilitative Services and Visually Handicapped and/or Financial Aid Office will use the RS-25/BVR-30 to advise the other party of any changes in student financial awards.
5. The Department of Rehabilitative Services will send to the Financial Aid Office the Confirmation Report with name and social security number of all mutual clients. The Financial Aid Office will complete overaward or underaward portion and return to the Department of Rehabilitative Services within 15 working days or less.

III. *Review of Memorandum*

The Memorandum will be reviewed on an annual basis regarding the following items:

1. Number of overawards and underawards.
2. Training activities between both parties.
3. Contact made by supervising college counselor to the Financial Aid Office at least semi-annually.

This Memorandum of Understanding may be revised by either party at any time with written notice.

Date

William T. Coppage
Commissioner
Virginia Department of
Visually Handicapped

Appendix B
Draft Auxiliary Aids Policy

_____ College takes seriously its obligation under section 504 of the Rehabilitation Act of 1973 not to discriminate against qualified handicapped individuals in federally-assisted programs or activities.

_____ College recognizes its responsibility under section 504 to insure that no handicapped student who can meet the academic and technical standards for admission to or participation in its programs is excluded from such participation or otherwise discriminated against because of the absence of educational auxiliary aids necessary for an equally effective education.

_____ College believes that its responsibility to insure the availability of necessary auxiliary aids can be met ordinarily by assisting handicapped students in obtaining aids from governmental units, such as state vocational rehabilitation agencies, or from private charitable organizations. Accordingly, handicapped students will be expected to exercise reasonable self-help in obtaining and maintaining funding from outside sources for required aids.

If a handicapped student has been turned down by outside agencies for aids that the College has determined are necessary, the College will take action to insure that the student is not denied the right to participate in any class or classes because of the absence of educationally necessary aids.

To insure the availability of necessary aids at the start of the semester, a handicapped student who believes he or she will need an auxiliary aid to participate in a course or courses offered by _____ College must* notify _____(person)_____ of the need for such assistance at least _____(number)_____ weeks before the first day of classes for that term. Such notice is required to give the student and the College reasonable time to determine if the requested aid is necessary to permit the handicapped student to receive an equally effective education, to identify sources for purchasing, leasing, or hiring any necessary aid, and, if possible, to obtain funding for required aids from appropriate government or charitable agencies.

*This statement, including this requirement, was drafted by Claire Guthrie, assistant general counsel at the American Council on Education in Washington. The Office for Civil Rights has suggested the use of "should," not "must," in this sentence. Legal counsel should be consulted on the question of making prior notice mandatory.

Appendix C

National Association of College and University Business Officers

Issues and Answers for Implementing Section 504

Section 504 is a civil rights law that guarantees equal opportunities for handicapped persons. It is based on the conviction that such individuals are able to perform effectively and successfully in all phases and at all levels of society.

Providing equal opportunities for handicapped persons may require specific action by higher education institutions, such as removing barriers or overly restrictive rules that disqualify or limit handicapped participation; but compliance with section 504 may often be achieved quite simply by permitting handicapped persons to work and to learn on the same terms as others.

The intent of section 504 is to give every individual, regardless of handicap, a chance to develop and use his or her talents and potentials to their fullest. Planning for compliance must begin with this as its premise and attention must be focused on finding approaches that maximize personal freedom and independence.

A full understanding of section 504 as a civil rights law demands a strong sense of the dignity, resourcefulness, and independence of each handicapped individual. The handicapped individual has the responsibility for his or her own life and the directions that it will take. To exercise their rights, and to exercise these personal responsibilities to their fullest, handicapped individuals must have opportunities to plan for themselves and to choose learning and career paths that are best suited for them as individuals.

While institutions of higher education must, under section 504, make accommodations and adjustments for handicapped persons, handicapped persons in turn have a clear obligation of "reasonable self-help." This principle is fundamental to section 504. It affirms that handicapped individuals will reap the benefits of their good judgment and responsible actions; conversely, this principle makes explicit that handicapped persons are expected to take equal responsibility for individual actions or personal working and learning experiences.

The members of the NACUBO task force who are handicapped took the lead in advocating the obligation of reasonable self-help. This obligation adds dignity and strength to the civil rights concept that governs section 504. Handicapped individuals on campus are likely to be equally strong advocates for their own independence and self-sufficiency. They should be fully involved in section 504 planning and compliance activities to insure that civil rights and reasonable self-obligations influence institutional decision making.

The touchstone of section 504 is integration and not segregation. While it may be tempting to undertake special efforts for handicapped students and employees, or to establish special of-

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The following positions have been developed by the NACUBO Task Force on Section 504, which has been active since fall 1978 to address complex issues and questions related to higher education's implementation of section 504.

The work of the NACUBO Task Force on Section 504 was made possible by Contract No. 300-78-0288 between the American Council on Education and the Department of Health, Education, and Welfare. This project is a part of the interassociation effort — Higher Education and the Handicapped (HEATH) — to provide colleges and universities with information and technical assistance on section 504.

The process of identifying issues for this task force effort used as its departure point Guide to the Section 504 Self-Evaluation for Colleges and Universities, *the product of NACUBO's previous (1978) effort under the HEATH program. It is felt that the positions addressed by the task force are a natural complement to material presented in the NACUBO guide.*

The following positions were drafted to be consensual in nature and reflect the interests and concerns of all parties presently involved in section 504 implementation. The task force's objective from the outset was the achievement of consensus among persons representing diverse backgrounds and interests. Through the composition of the task force and the work it has performed, it is believed that this objective has been met satisfactorily.

Although the following positions do generally represent consensus among task force members, reflecting a strong sense of the group, issuance of these positions does not imply that all members of the task force are in full agreement with every position adopted by the group.

It must be emphasized that these positions have not been formally cleared as positions of the federal government. They have not been formally approved by HEW. However, they have been reviewed by and discussed in great detail with representatives of HEW's Office for Civil Rights, and there is agreement that they conform to the intent of the statute and implementing regulations. NACUBO and the American Council on Education have submitted these positions to OCR Director David S. Tatel for his agency's formal approval and endorsement.

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fices or administrative units to serve handicapped persons, separate or different treatment of handicapped persons is only permitted under section 504 when it is absolutely necessary to achieve full participation. The creation of separate or independent administrative structures devoted to handicapped issues should be avoided whenever possible, since these may lead to unnecessarily separate or different treatment of handicapped persons. There should be centralized *planning* for section 504, but institutions should avoid the temptation to over-centralize *authority* over all programs and activities.

Section 504 does not mandate the creation of new programs and activities for handicapped individuals. It mandates the accessibility of programs and activities that already exist, and a full integration of handicapped persons throughout existing programs and institutional structures. Over-centralized authority for section 504 will be detrimental to handicapped students and employees, and perhaps to the institution, to the extent that it leads to the creation of separate programs or procedures that are not required under section 504 and are not necessary to achieve equal opportunities.

Section 504 does not address the personal needs of handicapped individuals, or any personal issues related to rehabilitation or care. Rehabilitation and personal care are not institutional responsibilities under section 504; they are the responsibilities of the individual handicapped person. Civil rights and equal opportunities should be the sole, intent focus of institutions of higher education in their work related to section 504.

Section 504 encourages equal opportunity for the handicapped through common sense, negotiation among reasonable persons, and respect for one another's dignity and independence. These are the most useful tools in section 504 problem-solving. With these tools and the diverse backgrounds and interests of task force members, the NACUBO task force addressed a number of questions commonly asked by college and university administrators, section 504 coordinators, students, and representatives of the handicapped community. It has arrived at consensual positions which it is hoped will be useful.

1 Do temporary impairments (such as those resulting from football or automobile accidents — cracked ribs, broken legs) necessitate the same kind of treatment and consideration by the institution as impairments of a permanent nature?

Position. Although impairments such as cracked ribs or broken legs would appear to be covered under section 504, the task force believes that it should be permissible, due to matters related to timing and reasonableness, for the institution to exercise greater flexibility in matters related to temporary impairments of this nature.

The task force feels that HEW clarification is necessary on this issue. Institutions need guidance, for example, on differentiating between impairments that are "permanent" and "temporary." Definitions or standards in this area are needed before any institution will be able to make informed and consistent decisions. Also, since the principle of "reasonable accommodation" does not apply to students and other program participants (but only to employees), the task force feels that it would be inappropriate for students with temporary impairments such as cracked ribs and broken legs to command the full array of rights and privileges granted under section 504.

Without regard to section 504, institutions have long undertaken responsibilities to meet individual needs of students with temporary impairments. Accommodations *should* be made for persons who express a desire to return to school or work during the period of recovery from temporary disability. However, *requiring* an institution to follow the strict requirements of section 504 in such cases (and to reschedule classes or make modifications in facilities) would be inappropriate. Accessibility should be achieved in individual instances to the extent possible, and flexible approaches should be developed so that the student does not suffer unnecessarily from his or her temporary impairment.

It should be emphasized that this position does not address temporary impairments that are clearly within the section 504 definition of "handicap." It addresses solely impairments of the nature of cracked ribs and broken legs.

Southeastern v. Davis

The positions recommended by the task force in this report were prepared prior to the U.S. Supreme Court decision in *Southeastern Community College v. Davis*. In that case the court ruled that a professional school may impose a legitimate physical requirement in admissions and need not substantially modify program content to accommodate a handicapped applicant.

2 How does section 504 apply to persons whose handicaps have been artificially corrected (e.g., a hearing-impaired person who uses a hearing aid or a visually-impaired person who uses corrective lenses)?

Position. If an individual uses (or could use) a hearing aid, corrective lenses or other such aid that is (or would be) effective in making programs and activities accessible, the institution is under no obligation to provide additional auxiliary aids should that person choose not to use his or her personal aid. For example, an institution need not provide an interpreter for an individual with a hearing impairment if the individual could achieve effective hearing by using a hearing aid. However, the institution should not assume that such corrective aids will be effective for all persons or for any individual under all circumstances. A person using a hearing aid, for instance, may have no or limited speech ability, requiring the use of a *reverse* interpreter. Or due to a malfunction of the aid a temporary interpreter may be required.

The issue of whether or not a particular handicap may be corrected effectively by a personal aid is one that the institution and individual will have to resolve on a case-by-case basis. Section 504 imposes requirements upon the institution, and not the individual student or employee. However, there must be a *shared responsibility* in such circumstances and the individual has an obligation of reasonable self-help.

It should be clear that the institution has *no* obligation to provide individuals with personal aids, such as hearing aids and corrective lenses.

3 Can some clarification be provided of the term "being regarded by others as handicapped" in the definition of "handicapped" persons?

Position. This term would appear to broaden the coverage of section 504 and expand the statute's protections so that all persons, not merely "handicapped persons," are protected from discrimination based on handicap. This phrase makes discrimination on the basis of handicap prohibited whether or not the person who is discriminated against is a "handicapped person," as defined. If someone "regarded by others as handicapped" who is *not* "handicapped" is discriminated against on the basis of handicap, he or she is protected under section 504. In a sense, this phrase broadens the protected class to include everyone and prohibits the "act of discriminating," regardless of the physical or mental

condition of the subject of the discrimination.

4 Are there any guidelines that may be employed by the institution to assist with determinations regarding whether someone is having a disruptive impact on any program or activity?

Position. The same standards of action, codes of performance, and levels of disruption should apply to everyone, regardless of handicap. Institutional rules and regulations need not be altered or changed in any way as a result of section 504. Disruptive or abusive behavior, regardless of whether the perpetrator is handicapped or nonhandicapped, will have to be treated locally on a case-by-case basis.

5 What is meant by the term "significant assistance" and how does it apply to different areas of operation, such as off-campus housing, bookstores that are not owned or operated by the institution, providers of social and recreational opportunities for students, and other services and activities?

Position. The task force did not feel that it was appropriate to define this concept, which is an integral concept in the HEW regulations on which a variety of institutional actions will have to be based. Rather, it strongly urges HEW to define this term and provide specific examples of actions that it intends to be encompassed by "significant assistance."

6 To what extent should institutions develop separate programs and activities for handicapped persons?

Position. Section 504 does not require, and in fact discourages, the creation of separate programs and activities for handicapped persons. The self-evaluation process will involve an analysis of all existing programs and activities of the institution. Modifications in these programs and activities shall be made to ensure opportunities for full participation and an integration of handicapped persons in existing programs and activities to the maximum extent possible. The regulations prohibit separate programs for handicapped persons unless they are necessary to afford equal opportunity. If problems are identified in the Self-Evaluation, existing programs and activities shall be modified whenever possible, rather than new programs created with the potential for new barriers to one's ability to function in the "most integrated setting appropriate."

While it may be tempting to create new programs and take initiatives to "do something for the handicapped," the basic objective of section 504 is ensuring full participation, a matter that may frequently require little more than an open mind. "Doing more for handicapped persons" may in some instances result in doing less for handicapped persons in their desire to function in an atmosphere free from barriers to equal opportunity. Overreacting to the section 504 requirements will not work to the benefit of the institution or its handicapped students and employees.

Although centralized planning for section 504 compliance is recommended, institutions should avoid the temptation to overcentralize authority over all programs and activities, since centralized authority may lead to separate programs and activities for handicapped persons that are not required and may not be necessary. To ensure full participation by handicapped students and employees "in the most integrated setting appropriate," it is recommended that authority be decentralized and that all persons responsible for substantive programs and activities of the institution be involved in phases of the Self-Evaluation that pertain to other operations. Institutions that already have "coordinators" with broad authority should ask whether or not separate programs or activities are necessary to eliminate barriers to full participation.

It should be noted that the HEW regulations state clearly that despite the existence of permissible separate programs and activities for classes of handicapped persons, individual handicapped persons must always be afforded opportunities to participate in any programs or activities that are not separate or different.

7 Should additional information be provided to institutions regarding the relationship between the Transition Plan and Self-Evaluation required under section 504?

Position. It should be clear to all institutions that facilities considerations are secondary to program considerations under section 504. Section 504 requires that all programs and activities be accessible. It does not specifically require that any particular campus building or facility be accessible without first considering the programs and activities that will be housed within.

The Office for Civil Rights may have used somewhat faulty judgment in requiring institutions to complete a Transition Plan (analyzing all facilities for their accessibility) six months prior to the required completion of the Self-Evaluation (analyzing all programs and activities, and methods for making them accessible). Section 504, after all, is primarily concerned with program accessibility, as opposed to facility ac-

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cessibility. With this reverse order of requirements in the HEW regulations, it is feared that too much emphasis has been placed on the technical standards and specifications required to make a building accessible, and too little has been placed on program accessibility and the relationships between program access and usable space. It is feared that the tone for all section 504 activities on many campuses may have been set by the activities related to completing the Transition Plan — the first major effort required under section 504 — and that a "facilities mentality" may be permeating all section 504 activities as a result.

8 What recourse does an institution have when its state has requirements or special provisions that conflict with, or make difficult or impossible, the accomplishment of actions related to section 504? Examples of such include state legislatures that will not appropriate funds for a state school to make a reasonable accomodation; limitations in state law that discriminate against handicapped persons in insurance or benefit programs; discriminatory state or local housing provisions; or employment criteria in state civil service codes that discriminate against handicapped persons.

Position. In all such instances the institution faces complicated legal dilemmas that are outside of the capabilities of the task force to address. Institutions confronted by such conflicts have a clear obligation to themselves to, if possible, pursue courses of action that will be defensible on some rational basis. The institution should maintain documentation that clarifies that it has made the necessary budgetary requests to comply with section 504 and has clearly delineated its section 504 obligations to the higher approving authority. Such documentation and delineation, however, do not remove or mitigate the institution's obligation to comply fully with section 504. The institution should make it clear to its higher authority that failure to comply with section 504 because of necessary state action, notwithstanding attempts by the institution to secure such action, may result in the imposition of federal sanctions and loss of federal financial assistance.

Clearly, such conflicts should be addressed by competent legal counsel and determinations should be made based on the specific legal and financial environments in which the institution is functioning. Institutions should feel some obligation, for their own sake and for the benefit of their handicapped students and employees, to keep abreast of developments in their states and to inform and educate state legislatures and agencies on the principles of section 504 and their applicability to all institutions of higher education.

9 To what extent is the institution responsible for the accessibility of facilities used for off-campus events, such as museums, theaters, stadia, and so forth?

Position. The institution has an obligation to ensure that such facilities are accessible, on the whole, to the extent that they are: (1) used as a part of any program of the institution; or (2) the subject of significant assistance that the institution provides to the owner or operator of the facility. If such facilities are *not* a part of any institutional program (e.g., an art museum that *must* be visited as a part of an art appreciation course) or significant assistance is *not* extended to the owner or operator (e.g., allowing free advertising in the campus publications), then the institution has no obligation with regard to their accessibility.

In selecting such facilities for use in programs of the institution, the institution should select, whenever possible, those that are accessible or receive federal financial assistance of their own and have independent accessibility obligations.

10 What is the proper role of assistants, employed by the institution, in making certain services available to handicapped persons in unique institutional settings (e.g., food service facilities, libraries, bookstores)?

Position. The institution has an obligation to maximize access within such facilities to the extent possible. It is recognized, however, that cafeteria lines, library and bookstore stacks, and other similar facilities may be difficult if not impossible to make fully accessible to and usable by all handicapped persons through structural changes alone.

In such cases, the institution may employ assistants who will perform tasks for individual handicapped persons who *express a desire and a need* for individual assistance of a non-personal nature. Such tasks may include providing meal services, obtaining books or materials in a library or reading room, or gathering books, materials or supplies in a bookstore or similar facility.

It should be noted that the delivery of services in such a manner must be "effective," and that proper notice and training will be required.

The institution should avoid generalizations based on handicap in such instances. Individual assistance should be provided on an individual-by-individual basis to persons who express a desire and a need for such.

11 If an institution leases facilities that are not accessible, should it break the lease and move to an accessible location, since section 504 prohibits the use of inaccessible facilities in cases where programs and activities are inaccessible as a result?

Position. First, institutions are not advised to break leases, since federal law does not give anyone the right to break a lease. Second, leasing inaccessible facilities is permissible under section 504 *so long as no programs or activities are inaccessible as a result.*

If inaccessible leased space must be accessible in order for all programs and activities to be accessible, the institution should work with the landlord to have the space made accessible or should sublease the space for the duration of the lease.

Obviously, institutions should refrain from leasing inaccessible facilities in the future unless such facility inaccessibility will have no affect on program accessibility.

12 Will programs be considered to be accessible if handicapped persons are required to use routes to classrooms, working areas, and so forth that are not as direct as those used by nonhandicapped persons (such as freight elevators, side doors, having to leave a building and re-enter in order to get from one floor to another)?

Position. Alternate routes (that are perhaps less direct) are permissible under section 504 so long as significant violations of the "most integrated setting appropriate" principle do not exist *and* institutions make their alternate routes "regular pedestrian passages" that may be used by all students and employees, not merely handicapped persons. A significant violation of the most integrated setting appropriate principle would be, for example, requiring someone to leave a facility in order to get from a weight room in an athletic facility to a locker/shower area. Complications arise in cases where grave security risks or danger would be created by making an alternate route a "regular pedestrian passage." In such instances, institutions are permitted to take building security and/or danger into consideration, but are urged to adopt approaches that will maximize regular and convenient access. The size of the

facility, its use(s), and the nature and degree of the risks involved are among the factors to be taken into consideration.

13 What institutional obligations exist regarding the accessibility of bookstores and the provision of required books and materials to handicapped students?

Position. The institution has no obligation to provide handicapped students with books or materials required as a part of any academic program, unless it provides books and materials to all students. Obtaining such books and materials is considered to be a "personal" act that falls within the responsibility of the individual student.

With regard to the accessibility of bookstores and similar facilities:

- Such facilities owned or operated by the institution must be accessible, although assistants may be provided to overcome physical obstacles (such as turnstiles and book stacks) that cannot be removed;
- Such facilities that are not owned and/or operated by the institution, but which receive "significant assistance" from the institution, must be accessible "on the whole," and the same flexibility regarding assistants exists as in the paragraph above; and
- Such facilities that are not owned and/or operated by the institution, and do *not* receive significant assistance from the institution, need not be accessible. However, when such stores are the only source of books and supplies for students, the institution should encourage such stores to achieve accessibility for handicapped persons.

In the opinion of the task force, "significant assistance" is *not* extended to bookstores if the only institutional contact with such stores is the provision of reading lists by faculty members or others.

14 Does the institution have any special obligations for persons with mobility impairments with regard to snow and ice removal?

Position. If the institution removes snow and ice, it should make special efforts to make certain that passageways used by persons with mobility impairments are clear. However, the task force feels strongly that institutions cannot assume complete responsibility for overcoming effectively and in a timely manner all acts of God. Institutions should "do the best they can" in such instances, and should make certain that handicapped students are not penalized or discriminated against for failure to attend classes or other programs when snow or ice prohibits effective transit. The institution should be aware of any special services that individual handicapped persons may require in the event of immobility due to snow or ice.

15 With regard to construction and renovation of facilities, what factors need to be taken into account in addition to technical standards and specifications?

Position. All new construction and the alteration of facilities must be performed according to standards (American National Standards Institute or its equivalent) that will ensure that facilities are readily accessible to and usable by handicapped persons. More importantly, however, persons responsible for programs and activities that will be housed in a particular facility should work closely from the outset with architects and others responsible for design. Institutions should be aware of differences that may exist between a physically accessible environment, based on technical specifications and measurements, and an environment that allows for complete program accessibility and a practical relation among units of related, usable space.

16 What additional guidance with regard to program accessibility may be offered to institutions with historical buildings that may require some or extensive modification before all programs and activities will be accesible?

Position. The task force is not qualified to provide technical assistance on this question, and consequently defers to organizations such as the Association of Physical Plant Administrators of Universities and Colleges (Eleven Dupont Circle, Suite 250, Washington, D.C. 20036) and the National Trust for Historic Preservation (740 Jackson Place N.W., Washington, D.C. 20006) on questions related to achieving accessibility in historical buildings.

17 If an institution *moves* to *new* facilities — constructed since the June 3, 1977 effective date of section 504 requirements for new construction — that are not completely accessible in conformance with ANSI standards, what are the institution's obligations regarding accessibility of these facilities?

Position. The institution would have no obligations regarding the total accessibility of these new facilities, *so long as* they were not "constructed by, on behalf of, or for the use of" the institution. The principle would pertain regardless of whether the institution purchased or leased the facility or used it through some other arrangement. As with all facilities used by the institution, however, *physical inaccessibility may not compromise program accessibility.* Despite the use of these and other inaccessible (or partially inaccessible) facilities, all programs and activities of the institution must still be accessible.

Section 504 requirements that would pertain to such facilities are those for "Existing Facilities" located at section 84.22. Requirements contained in section 84.23, "New Construction," would not be applicable.

It must be emphasized that this Position (and the question to which it is a response) deals *solely* with facilities constructed since June 3, 1977 that were *not* constructed by, on behalf of, or for the use of the institution.

18 Is the institution required to provide aids, services, and accommodations, as required by the regulations, to part-time students and others who are not enrolled in a degree program of the institution?

Position. Yes.

19 Does section 504 contain any *preference* in admissions or employment with regard to admitting or hiring handicapped persons?

Position. Section 504 clearly contains no preference, and institutions are not obliged to accord any preference based on handicap in admissions or employment recruitment. This general statement would not apply, however, in individual cases where institutions were taking voluntary or remedial action under section 504. Also, institutions should be aware of affirmative action requirements under section 503 that may be interpreted to require preferential treatment based on handicap for employees and applicants for employment.

20 Does section 504 cover foreign students in the same manner as U.S. students?

Position. Section 504 and its implementing regulations do not exclude foreign students from coverage, since the statute applies to "no otherwise qualified handicapped person in the United States." It is therefore clear that all students in attendance at a college or university, regardless of whether

they are foreign or U.S. citizens, are entitled to programs, activities and services that are accessible.

The task force, however, urges HEW to clarify the extent to which section 84.42, "Admissions and Recruitment," applies to different groups or classes of noncitizens. It is clear that all other sections of the regulations apply fully to students who are noncitizens. The extent to which section 84.42 applies, however, needs additional clarification.

Institutions should be aware of certain problems that may arise in the case of foreign students who are not fluent in English and also require auxiliary aids. Unless the institution provides all of its students (or all of its foreign students) with services designed to overcome deficient English skills, the institution is under no obligation to provide foreign handicapped students with such services. Auxiliary aids provided by an institution (e.g., readers, interpreters) need not be remedial in nature. Institutions may apply the same English language requirements to foreign handicapped students as it applies to all of its foreign students, and need not make auxiliary aids available to an excessive degree in order to overcome deficient English language skills.

21 To what extent does the institution's obligation in the recruitment area pertain to voluntary recruitment efforts conducted without much if any institutional supervision or coordination?

Position. To the extent possible the institution should regularly inform alumni(ae) and others involved in informal, volunteer recruitment efforts of the institution's obligations under section 504. The more organized the recruitment effort, and the more formal the institution's participation and communications with outside recruiting groups, the greater the institutional obligation becomes. In this regard, the institution may wish to prepare a brochure or statement for dissemination to alumni(ae) and others who serve as recruiters or interviewers for the institution.

22 What clarification may be provided regarding the institution's rights to make preadmission and postadmission inquiries related to handicap, and to request medical information from persons with handicaps?

Position. *Preadmission Inquiries:* Institutions may not ask applicants for admission questions related to the nature and extent of handicap unless they are taking *remedial* or *voluntary* action under section 504. However, it is permissible to include a statement in application materials that, without requesting such information, gives applicants the opportunity to provide such information to the institution on a *voluntary* and *confidential* basis. Such statements should emphasize that the information will be kept strictly confidential, if provided, and will not be used to discriminate on the basis of handicap in any way. It should be emphasized that the information would be helpful to the institution in planning and making accommodations and adjustments in a timely manner for those incoming students who will require such. Including such statements in application materials may be particularly important for institutions that operate open admissions programs, and consequently may have little time to make accommodations and adjustments between the application process and the beginning of classes.

The following is an example of a statement that may be used, or adapted for use, for these purposes:

> Federal law prohibits *(name of institution)* from making inquiries regarding handicap prior to admission. Information regarding handicaps, voluntarily given or inadvertently received, will *not* affect any admissions decision. However, if you would, upon admission and acceptance, require special services because of handicap, you may notify *(name of person or office)*. This *voluntary* self-identification allows *(name of institution)* to prepare for the effective delivery of all programs, activities, and services to handicapped persons. If provided, this information will be kept in strict confidence and will have no effect on your admission to *(name of institution)*.

Preadmission Information: Institutions must make certain that no discrimination based on handicap occurs when information is received prior to admission that identifies someone as being handicapped. Such information may be inadvertently acquired in resumes, letters of recommendation, interviews, or from national testing services.

In the case of national testing, wherein institutions often receive for handicapped persons test scores that are not validated or ineffective as admissions criteria, institutions are obliged to find effective alternatives by which individual skills, aptitudes and competencies may be judged. Handicapped persons may not be discriminated against because of national testing scores that are not valid, or because of the absence of such scores.

The task force emphasizes that the inadvertent receipt of information concerning an applicant's handicap, whether from the applicant, a reference, or a testing service, does not provide a basis for inferring that admissions decisions have been discriminatory.

Postadmission Inquiries: Institutions may, after admission, make inquiries on a confidential and nondiscriminatory basis regarding handicaps that may require accommodations or adjustments. Students, however, are not required to respond to such requests for information.

In requesting such information, the institution may emphasize that responses from persons who will require accommodations or adjustments will be necessary to ensure that accommodations or adjustments are made in a timely manner. Nonresponses to the institutional request for information will not have any negative impact upon the institution, aside from delaying the process of making programs and activities accessible in individual instances. Rather, nonresponse by the student will only hamper the individual in his or her educational pursuits if the student will in fact require institutional assistance.

The institution should view requests for such information as it views all other information requests of students that enable the institution to offer programs, activities, and services in a timely and effective manner.

Postadmission Requests for Medical Information: In individual instances, where there appears to be a substantial question about the relationship of a handicap to an accommodation requested, the institution may request that the individual student provide medical or other information that would resolve the question. If such information is not sufficient to satisfy institutional concerns, the institution may conduct its own medical examination to establish the relationship between handicap and accommodation.

Institutions are not permitted to request of handicapped students in a *blanket manner* medical evidence of handicap prior to taking actions required under section 504. Such requests must be *individual* and must result from the "substantial question" discussed above. An institution may not ask its handicapped students to provide medical evidence of handicap as a part of any general request for information, unless requests for medical information are made of *all* stu-

dents, handicapped and nonhandicapped.

Any information gathered in response to such institutional requests must be maintained in a confidential manner. As a part of all such requests, the institution should emphasize the confidentiality that medical information will be accorded and indicate that no such information will be used to discriminate on the basis of handicap.

23 So long as the institution provides *some* accessible seating for persons at all special events (e.g., football games, theater, lectures), need it provide any choice, or any reasonable selection of seating?

Position. Some accessible seating must exist for all such events. Ideally, a reasonable selection of seating would exist, also. However, in cases where little flexibility exists for the renovation of such sites, institutions should strive for access that will provide handicapped persons with seating that is located among the better viewing locations. If the only accessible seats are among the higher-priced seats, then the seats should be made available to handicapped persons using a rate based on the average price of all seats per performance.

Whenever possible, institutions should allow for the fact that handicapped persons have friends who are not handicapped with whom they would like to be seated at such events. Also, although it is not related to physical accessibility, institutions should make certain that persons who are hearing-impaired receive seating close enough for them to hear or speechread, and/or that interpreters are located in such a manner as to ensure simultaneous viewing by the hearing-impaired person of the interpreter and the event.

24 What options exist for institutions when their insurance carriers discriminate against students or employees with limited coverage, or increased cost, based on handicap? (For example, section 504 prohibits a standard insurance practice of excluding benefits for pre-existing conditions.)

Position. As the regulations are worded, the obligation is on the institution and not the insurance carrier to make certain that all benefit and insurance programs are free of discrimination based on handicap. The task force strongly urges HEW to acknowledge the inability of institutions in most cases to have any impact on policies or practices adopted by the insurance industry. If HEW has objectives related to eliminating discrimination based on handicap in all insurance programs, the task force recommends that HEW use its influence to secure the necessary changes and commitments from the insurance industry.

In the interim, institutions should do everything within their ability to renegotiate insurance and benefit programs to remove discriminatory provisions, or to find alternative providers of insurance and benefits programs that do not discriminate against handicapped persons. The option of self-insurance should also be explored in such instances.

Institutions should be certain that they are aware of all relevant legislation and regulations related to insurance, since some states, for example, are now adopting regulations prohibiting discrimination in insurance and benefits on the basis of blindness.

25 Is it possible to develop any national standards for determining, department by department, the essential elements of academic programs?

Position. The task force urges that national attention be focused on issues related to essential elements of academic programs. For example, HEW involvement in discussions of licensing requirements (with state agencies and professional and accrediting associations) would be beneficial.

Despite national attention and possible reform, however, determinations regarding essential program elements must be made locally, based on individual circumstances and the nature of the course, department, and degree program in question. It must be emphasized that no person may be excluded from any course, or any course of study, *solely* on the basis of handicap. When individuals are qualified to pursue certain endeavors, before or after accommodations or minor adjustments, they must be permitted to participate fully, consistent with their skills, abilities, and energies. In this regard, handicapped persons and their limitations should be viewed the same as nonhandicapped persons and their limitations.

Faculty members and academic administrators are urged to study essential elements of programs at their institutions and to ensure that decisions in this area do not unnecessarily restrict handicapped persons in their opportunities to pursue to the fullest their individual skills, aptitudes, and competencies.

A perception of limited employability for handicapped persons in a certain field, whether accurate or not, is *not* a valid reason for denying either admission or the pursuit of a particular study. Institutions are permitted under the regulations to inform handicapped applicants and students of restrictive licensing and other requirements in a specifiic field, but they are not permitted to limit opportunities as a result.

Blanket categorizations based on handicap, related to the abilities and skills of handicapped persons (or classes of handicapped persons) to perform effectively under certain circumstances, are strictly prohibited under section 504. Decisions in this regard must be made on an individual-by-individual basis, as they are made for nonhandicapped persons. Also, generalizations based on handicap related to the safety and security of the individual (and other persons) are not appropriate. It would be inappropriate to generalize, for example, that a person who has a certain handicap would be any more or less hazardous in a laboratory than a nonhandicapped person. In all cases, risks related to safety and security must be analyzed based on individual skills and the precautions that an individual takes, regardless of whether an individual is handicapped or nonhandicapped.

26 If one section of a particular course is made accessible to persons with mobility impairments, would it be discriminatory to require such persons to attend that section even if it is not being taught by the professor that he or she desires?

Position. To a large extent this must depend on individual circumstances that exist on a particular campus and within a particular department. In general, however, handicapped students, to the extent possible, should be provided with the same freedom of choice regarding course sections as nonhandicapped students. If students, in general, have no choice, then obviously handicapped students need not have any choice. But if students are presented with a choice regarding course sections on a first-come-first-served (or some other) basis, then every effort should be made to satisfy the individual preferences of persons with mobility impairments and persons who require an interpreter.

Common sense and flexibility should prevail in such matters. If, for example, a particular course has four sections and one deaf person enrolls for the course, and the deaf person expresses

an early desire for a particular section according to some institutional process whereby students express choice, then the interpreter should be assigned to the section chosen by the deaf person. If, on the other hand, four deaf persons enroll in this same course and each desires a different section, then the institution should not be obliged to provide four interpreters. It may leave the question of which section will have the interpreter up to the four deaf students to resolve, or find some other equitable means of resolution.

Institutions are reminded to avoid, *to the extent possible*, class scheduling that will result in the concentration of handicapped persons in the same classroom. Accessible classrooms and auxiliary aids will be required based on some proportion that takes into account the number of handicapped and nonhandicapped students in a particular course so that handicapped students may learn and study in as integrated a setting as possible. Obviously, there would be no need to make special scheduling provisions for handicapped persons who do not require any special or separate treatment.

27 Some institutions may have difficulty achieving program accessibility for persons with mobility impairments in the case of programs or activities that involve unique sites. Some coursework, for instance, may require hikes over rough terrain (e.g., archaeological digs), the use of expensive vehicles that cannot be made accessible (e.g., ocean vessels used in marine biology), or steep climbs up stairways that cannot be renovated (e.g., to the top of observatories). What special standards may an institution apply to unique cases such as these when it is apparent that program accessibility cannot be achieved in its purest sense?

Position. HEW has already acknowledged and addressed this question, to some extent, in Policy Interpretation No. 4 that appeared in the *Federal Register* of August 14, 1978. In that interpretation, carrying persons in wheelchairs is made permissible in limited instances providing that certain procedures are followed. Among the instances where carrying is permitted so long as the proper procedures are followed, as outlined in the Policy Interpretation, is that of "a university that has properly maintained that the structural changes and devices necessary to adapt its oceanographic vessel for use by mobility-impaired persons are prohibitively expensive or unavailable." It is assumed from this interpretation that carrying and/or other flexible approaches will be acceptable under section 504 where particularly unique conditions exist. Decisions in such cases should obviously be based on the skills, abilities and interests of the individuals involved, and not on arbitrary generalizations based on categories of handicap.

It should be noted that in some cases carrying and other flexible approaches may still not overcome particular obstacles to full participation.

(*Note:* This position does not address complicated issues related to the "essential elements" of programs and whether or not certain program requirements should, in individual instances, be substituted for or waived entirely.)

28 Is the institution's obligation to make auxiliary aids available to handicapped students in any way affected by the individual student's financial status and ability to pay for the aid himself or herself?

Position. As the regulation is currently written, no. In fact, the application of a needs test by a state voc/rehab agency could lead to ineligibility and an increased *institutional* obligation.

29 Should institutions develop and use a waiver form to protect the rights of faculty members when tape recorders are used as auxiliary aids in the classroom?

Position. Because the new copyright law already bestows copyright privileges on the lecturer even if the work is unpublished, such waivers should not be necessary. However, students using recorders should be informed that reproduction or any distribution of their recordings beyond their individual use, without the permission of the lecturer, is probably a copyright violation. Students should be aware that their right to copy in such limited instances is not accompanied by any right to distribute materials.

30 What is the institution's obligation regarding discretionary requests for auxiliary aids on the part of students or employees? That is, if the institution provides readers, for instance, need it provide materials on tape also?

Position. The institution has an obligation to make auxiliary aids available that will be *effective* for the individual. There will be degrees of effectiveness for individual handicapped persons (braille versus readers, for example) *and* cost factors for the institution associated with different forms of aids. Decisions regarding relative effectiveness and cost should be made on an individual-by-individual basis. So long as an aid is *effective* in making a particular program or activity accessible to an individual, however, the institution will be fulfilling its obligation under section 504. (In employment situations, particularly, cost factors may be used in determining whether or not an accommodation is "reasonable" or an "undue hardship." In the employment context, however, the institution has a very clear interest in making certain that a particular auxiliary aid is effective, thereby making the employee more effective and productive.)

Institutions are reminded that different auxiliary aids may be better suited to a particular program or activity than others, and they should consult handicapped persons on questions of individual effectiveness. For example, where an interpreter and a notetaker may be necessary in a seminar to allow for active participation by a deaf person, a lecture may be made more easily accessible through provision of an interpreter and a typed text of the lecture. In some cases readers will be more effective for blind persons than taped texts, and vice versa.

31 What would be an appropriate definition or description of the term "personal use or study" as it is used related to auxiliary aids in subparagraph 84.44(d)(2) of the HEW regulations?

Position. It is the task force's judgment that the word "personal" in this phrase is intended to, or should, modify the word "study" in addition to the word "use."

The institution need not provide auxiliary aids for "personal" use or study, to include use or study of materials that are *not* specifically assigned as a part of, or otherwise directly related to, an academic program. Also, the institution need not provide auxiliary aids during periods when the library(ies) of the institution are not open. If an institution has either no library or exceptionally limited times when the library is open, then some reasonable schedule for the provision of aids should be developed in consultation with handicapped students. The use of aids need not be restricted to in-library use, however.

On a related issue, institutions that operate restrictive reserved reading programs should ensure that such programs are modified adequately to achieve access to such materials by all

handicapped persons. The same would be true of reading rooms and materials located within different departments of the institution.

32 What are the institution's responsibilities with regard to the provision of brailled or taped materials to blind students? How much lead-time is appropriate?

Position. Although the institution has a primary responsibility for making such aids available, it must be emphasized that institutional responsibility for producing brailled and taped materials is not primary unless and until existing sources are exhausted. As a standard procedure, institutions should be prepared to advise blind students of resources available for transcribing textbooks and other materials into braille or onto tape.

By referring blind students to appropriate community, state, and national organizations that offer such services on a regular basis, or maintain collections of such materials, the institution will in most cases be fulfilling its primary obligation to make such aids available. Using already existing library collections of braille and tape not only serves the institution by limiting its own financial commitments, but enlarges such collections for future use. Utilizing existing sources for such materials eliminates waste and duplication, ensures the quality of the aids, and familiarizes the blind student with existing channels and the procedures for obtaining braille and tape independently.

It is important for the students who need the materials transcribed to be fully involved and responsible for obtaining the necessary services on their own. Institutions, in fact, would assist in furthering the knowledge and experience of blind students by establishing procedures that involve acquisition of braille and tape by the individual.

Again, the primary institutional responsibility lies with making certain that such aids are *available*. This responsibility may carry with it the obligation to maintain a familiarity with existing sources and to refer blind students to them, as appropriate. But only after existing sources are exhausted need the institution be concerned with the *production* of such aids on their own.

The lead-time necessary to deliver aids effectively may vary from locale to locale. The most important consideration in this regard, in addition to making certain that lead-time does not compromise the "effectiveness" of service delivery, is being certain that all interested parties — teachers, librarians, and blind students — know precisely what the lead-time is. Full communication on this issue will minimize the disruption in academic programs.

33 What can be done to resolve the current impasse that exists related to the delivery of auxiliary aids to handicapped students by state vocational rehabilitation agencies, and the conflict existing on this issue between HEW's Rehabilitation Services Administration and Office for Civil Rights?

Position. A very serious barrier to the full and effective implementation of section 504 is HEW's failure to state clearly how federally financed rehabilitation programs should serve students in institutions of higher education. Although HEW is responsible both for setting rehabilitation services standards and for enforcing section 504, activities which should complement each other, it treats them as separate endeavors, and departmental policies in the two areas often conflict. Handicapped students thus suffer needless uncertainty, delay, and cost in securing assistance; institutions are required to finance services that could be provided more economically *and more effectively* by rehabilitation agencies; and the promise of rehabilitation service programs for many college and university students is largely unfulfilled.

The departmental agencies that should be responsible for remedying this situation have, at best, acquiesced. Accordingly, the NACUBO task force calls on the Secretary of HEW to take prompt and effective action to coordinate the programs of the Rehabilitation Services Administration and the Office for Civil Rights. The secretary has clear authority to take significant action with regard to major problems in this area, and for him to do so would be in the serious interest of handicapped students, institutions of higher education, and, from the task force's perception, the Department of Health, Education, and Welfare.

The central difficulty is simply that rehabilitation programs frequently refuse to provide "auxiliary aids" of the type called for in the department's section 504 regulation at 45 CFR 84.44(d). HEW's responsibility for this failure is especially clear in light of the following statement by HEW Secretary Califano in the appendix to the section 504 regulation:

> The Department emphasizes that recipients (institutions of higher education) can usually meet this (auxiliary aid) obligation by assisting students in using existing resources for auxiliary aids such as state vocational rehabilitation agencies and private charitable organizations. *Indeed, the Department anticipates that the bulk of auxiliary aids will be paid for by state and private agencies, not by colleges or universities.* (42 *Fed. Reg.* 22692-3; May 4, 1977; emphasis supplied.)

As RSA acknowledges, "the reference to State vocational rehabilitation agencies has apparently caused an expectation that the VR agency will form the major financial source for paying the cost of auxiliary aids." (Program Instruction RSA-PI-78-7, 12-15-77.) Yet this expectation has remained unfulfilled, substantially as a result of RSA policy, and OCR has apparently accepted that result.

The secretary evidently promulgated the auxiliary aid requirement based on an assumption that resources from his own department would be available at a certain level. They are not, and HEW's failure to rectify this situation leaves students, higher education administrators, and rehabilitation personnel alike unsure of the department's commitments to higher education for handicapped persons.

Federally financed rehabilitation programs are a major source of financial support for handicapped persons. Availability of such services can be determinative in successfully financing higher education for individual students; at the same time, state rehabilitation agencies often can provide auxiliary aids more economically, and from a basis of wider knowledge and expertise, than can thousands of individual educational institutions. Yet there now exists a situation wherein OCR, RSA and state rehabilitation agencies acquiesce in or actively promote the following barriers to service for handicapped students in higher education:

- Application of the "similar benefits" provision of section 101(a)(8) of the Rehabilitation Act to relieve rehabilitation agencies of *all* responsibility for students in higher education, on the grounds that section 504 makes institutions of higher education responsible for the "first dollar" of resources for them — despite the fact that section 101(a)(8) was enacted many years before section 504 and for purposes unrelated to it. Although Congress has never examined how these two provisions should properly be coordinated, this administrative policy presumes to effectively contradict Congress' intentions to expand educational opportunity through section 504.
- Application of "needs" tests in

rehabilitation programs that are not coordinated with student financial aid needs tests administered by institutions of higher education, or with the section 504 regulation's provisions concerning student financial aid.

O Application of discretionary authority in the Rehabilitation Act to disfavor students in higher education as a class of rehabilitation services beneficiaries.

O Application of discretionary authority in the Rehabilitation Act to disfavor graduate and post-baccalaureate professional students as a class of rehabilitation services beneficiaries, with particular adverse impact upon students who do not continue their post-baccalaureate education directly from undergraduate study.

O A wide variety of differences in rules and levels of benefits among state rehabilitation agencies, particularly as to "portability" of rehabilitation benefits for study outside the provider state.

O Application by some state rehabilitation agencies of low funding maximums which strongly favor the lower tuition costs of state colleges (for obvious state interests) to the degree that students are being discouraged financially from considering the alternative of independent education. In cases where a desired curriculum or degree for a particular field does not exist in a state college system, students may be financially forced into undesirable alternatives. No latitude exists within many state agencies for consideration of at least proportional funding for the higher costs of independent education.

These issues can be resolved in ways that assure handicapped students in institutions of higher education the most effective and economical support possible, without relieving their institutions of responsibility under section 504. This may be accomplished consistently with rehabilitation agencies' missions to provide services for rehabilitation rather than simply on the basis of handicap. But solutions will be developed only to the extent that the secretary exercises his authority and responsibility to explore them. OCR has circulated a draft Policy Interpretation (No. 7, December 1978) which touches on these problems but offers no solution; Interim Program Instruction RSA-PI-78-7 (December 15, 1977) defines a variety of issues from RSA's perspective but, similarly, offers no solution. The NACUBO task force believes that it is imperative that the secretary instruct these agencies to agree upon a single, clear, and effective departmental resolution to the problems outlined above.

Higher education institutions are dedicated to missions related to education; and state rehabilitation agencies are dedicated to missions related to rehabilitation. The task force urges the secretary to take action that will lead to a reflection of these principles in the policies and actions of his department. Section 504, by the secretary's own statement, was not intended to result in the establishment on every campus of new expertise in rehabilitation and new funds sufficient to support widespread rehabilitation efforts by colleges and universities. The task force feels that higher education will have met its obligations to handicapped students under section 504 to the extent that equal educational opportunity is provided and civil rights are carefully safeguarded. But the task force, and the institutions that it represents, feels very strongly that the role of rehabilitation should remain with rehabilitation specialists, and that the secretary's own initial interpretation of section 504 with regard to auxiliary aids should become departmental policy.

34 What are some of the factors to consider in arriving upon a "comparable selection" of housing units?

Position. The following factors are among those that may be considered in a "comparable selection" of campus housing:

O campus location (with respect to distances and terrain relief to a variety of campus academic, recreational, and cultural facilities of different locations);

O architecture (style and age);

O size (size of rooms, building size, and high-rise versus low-rise);

O residence programming (designations based on sex, class rank, study field, and so forth);

O type of unit (single, double, suite, and so forth); and

O types of programs within a residential facility (e.g., recreational, study aids).

35 Does the requirement related to comparable housing selections make it necessary for institutions to provide housing opportunities above the first floor for persons in wheelchairs? Some state and local laws prohibit such practices.

Position. The task force discussed this complicated question at great length, but decided against drafting a specific position when it was learned that the Office for Civil Rights is developing a Policy Interpretation on this issue. The task force would appreciate an opportunity to review draft OCR positions prior to issuance in final form. Also, the task force encourages the expeditious development and issuance of an OCR Policy Interpretation on this question, since many institutions need specific guidance in this area.

36 From the viewpoint of institutional liability, what special considerations exist, for the protection of the individual and others, with regard to handicapped students and employees?

Position. *Employees, Individual:* It would appear that section 504 (and section 503) requires the institution to hire and retain employees even in cases where the employment may be injurious or unhealthy to the individual employee. Accommodations and adjustments should be made to lessen the health hazards for the individual. And the institution may wish to have the employee sign waivers or consent forms and statements that the institution has fully informed him or her of the risks involved in the employment.

Employees, Others: Handicapped persons, per se, are not any more or less dangerous to others, in any setting, than nonhandicapped persons. The same standards of safety should be applied to individual handicapped persons, on a case-by-case basis, as are applied to nonhandicapped persons. Persons who have skills or energies that are limited to the point of creating hazards for others in the workplace should be restricted in their jobs, or not hired. This, however, applies to handicapped and nonhandicapped persons equally. Generalizations based on handicap regarding safety are not appropriate.

Students, Individual: The same general reasoning applies to individual students as applied, above, to individual employees. Accommodations and adjustments should be made to make any individual situation less hazardous. But, in general, the individual must be permitted under section 504 to participate fully in all programs and activities if he or she chooses. The institution may wish to have the individual student sign waivers or consent forms and statements that the institution has fully informed him or her of the risks involved in the participation.

Students, Others: The same general reasoning applies to student issues as applies to employee issues on the subject of the safety of others. Handi-

capped students, per se, are not any more or less dangerous to others, in any setting, than nonhandicapped students. The same standards of safety should be applied to individual handicapped persons, on a case-by-case basis, as are applied to nonhandicapped persons. Persons who have skills or energies that are limited to the point of creating hazards for others in the classroom should be restricted in their activity, or prohibited from the activity. This, however, applies to handicapped and nonhandicapped persons equally. Generalizations based on handicap regarding safety are not appropriate.

Student Athletes: Unique risks may exist in cases where certain classes of handicapped persons wish to participate in contact sports. In a Policy Interpretation issued by HEW on August 14, 1978, institutions are required, for example, to permit participation in contact sports by students who have lost an organ, limb, or appendage, but who are otherwise qualified. In such cases, according to HEW, the institution may require parental consent and approval from the doctor most familiar with the student's condition. As a result of this interpretation, institutions may be required to permit participation in contact sports by any person qualified to do so, based on skills and abilities, regardless of the risks to the person. In such cases, the institution should receive parental consent, as appropriate, and medical permission for participation. It may also wish to have the student athlete sign a waiver and/or statement acknowledging that the institution has fully informed him or her of the risk involved in such participation.

37 What special guidance can be provided to institutions that are financially troubled and have less flexibility for compliance with section 504 requirements, particularly smaller independent institutions?

Position. All institutions of higher education should achieve accessibility in programs and activities, regardless of the size or budget of the institution, the number of handicapped students or employees that will be served by changes, or the age of campus facilities. Institutions are encouraged to take full advantage of the flexibility that exists within the section 504 requirements and to exercise common sense and reasonableness in arriving upon effective approaches to section 504 compliance. In the cases of institutions with greater budgetary limitations, greater creativity may be required to develop accessible programs and activities in the absence of adequate resources.

Institutions are encouraged to remember that accessibility is a *process* and not a set of arbitrary requirements. To the extent that institutions develop and implement flexible and effective response mechanisms, they will make major progress toward meeting effectively the needs and requirements of handicapped persons for accessible programs, activities, and services.

The principle of program accessibility applies to all institutions, but the means for achieving program accessibility may vary greatly from one institution to another. For example, institutions that cannot meet required standards of program accessibility due to nonexistent resources (particularly smaller independent institutions) should compensate for their financial inabilities by becoming more flexible and creative in response to section 504.

However, it is clear that the absence of any "reasonable accommodation" and "undue hardship" standard in the provisions of Subpart E of the regulations means that, in some instances, institutions may be forced to implement programs that deviate somewhat from section 504 principles if total noncompliance, or program inaccessibility, is the only alternative. For instance, institutions with severe financial difficulties may find it necessary to adopt alternatives indefinitely that are only acceptable under the regulation in the short run. These might include the carrying of persons in wheelchairs beyond June 3, 1980; the use of alternate routes even if they are not normal pedestrian routes; greater relocation of activities and services than would otherwise be acceptable or desirable; and making fewer preparations in advance to cover every eventuality, but making certain that persons and procedures are responsive to individual needs.

The task force wishes to *emphasize strongly* that it does not advocate compromises in the goal of program accessibility. However, in cases where full compliance with HEW regulations is not possible, it is clear that the maximum program accessibility possible under the circumstances is the objective that should govern all actions.

It is the feeling of the task force that major changes can take place on every campus in the interest of achieving accessibility for handicapped persons in all programs and activities in U. S. higher education. Many of these do not require any major expenditure of limited institutional resources. *The achievement of such accessibility should be the principal objective, with "compliance" relegated to a secondary issue.*

This "do as much as you are able to" attitude expressed by the task force is in recognition of the serious difficulties that many colleges and universities are having in achieving full compliance with section 504 by the June 3, 1980 deadline for structural modifications. It is *in no way* intended to dilute the requirements of section 504. Also, quite obviously, no guidance or recommendation provided by the task force has the force of law or is able to lessen the legal obligations that institutions have under section 504.

This position, rather, reflects the feeling of the task force that handicapped students across the nation will benefit to a greater extent if institutions with no other alternatives do as much as they can, and HEW requirements are adjusted slightly to fit individual circumstances, instead of doing little or nothing because total compliance with all HEW standards cannot be attained.

The task force recommends a flexible, personal approach to accessibility for those institutions, particularly smaller independent colleges, that cannot achieve program accessibility in any other way due to limited financial resources. However, *it must be emphasized that such an approach, and certain measures recommended or mentioned in this position, may or may not be consistent with current HEW policy on section 504, and that any institution undertaking such an approach or such measures is doing so at its own discretion. The NACUBO task force has no authority to modify the law or its specific requirements, no capacity to defend institutions if charges are raised by HEW or in courts of law, and assumes no liability for the individual actions taken by institutions.*

Finally, it should be emphasized strongly that no reasonable handicapped person interested in his or her education or career has any desire to see institutions of higher education subjected to arbitrary undue hardship or, worse, forced to close their doors because of socially mandated programs. Flexible and creative approaches to the elimination of discrimination should be viewed favorably by all interested parties in cases where traditional actions cannot be taken due to nonexistent resources. Operating according to the spirit of section 504, and *documenting all efforts to achieve accessibility* to the maximum extent possible, is, the task force feels, a more desirable approach than total noncompliance because compliance with the current regulation is not possible. ♦

Section II: Characteristics of the Handicapped Population And Implications for Higher Education

Introduction

The purpose of this section is to review data sources that describe the handicapped population and to provide information to those at the postsecondary level who are planning expanded educational opportunities for the handicapped. This section summarizes the results of several primary and secondary data sources describing the national handicapped population.

Sixteen such data sources were identified and reviewed. Figure A identifies these studies and provides brief descriptions of their purposes and results. Readers are urged to refer to the summary profiles at the back of this section for a more complete synopsis of each study. The profiles are included to help the reader evaluate the effects of differences among data sources that may affect the uses and implications of the information.

Figure A

Data Base	*Abstract*
1. *The American Freshman: National Norms in Fall 1978*, Austin, Alexander W.; King, Margo R.; and Richardson, Gerald T. Cooperative Institutional Research Program, University of California and American Council on Education.	Thirteenth annual report of national normative data on characteristics of students entering college as first-time, full-time freshmen. Data have been weighted to provide normative picture. Provides initial input information for longitudinal research. Data are based on responses from 187,603 freshmen from 383 institutions and are reported separately for women and men, and groupings of institutions. Data are stratified by institutional characteristics, including predominant race of student body, type, control, and "selectivity level" (defined as a estimate of average academic ability of entering class).
2. *An Investigation of Maternal Rubella Students in a Postsecondary Program for the Deaf: Looking Ahead to the 1980s*, Augustin, Mark; Marron, Michael; and Stuckless, Ross. National Technical Institute for the Deaf, Rochester, New York, October 1979.	A substantial increase in numbers of deaf students applying to postsecondary programs is expected in the 1982-85 period due to the 1963-65 rubella epidemic. Conclusions support the contention that many of the 1963-65 rubella deaf student population will be eligible for admission to postsecondary programs.
3. *One-in-Eleven Handicapped Adults in America*, President's Committee on Employment of the Handicapped.	Focuses on characteristics of the adult handicapped population, such as sex, age, education, income, and employment. Specific characteristics examined were: years of school completed, income in 1969, poverty status, and labor force status. Findings show handicapped people have less income, less education, less employment, and more poverty than the mainstream population.

Data Base	*Abstract*
4. ***The 1964-65 Rubella Epidemic and Its Implications for Postsecondary Education and Rehabilitation Services to Young Deaf Adults in the 1980s***, National Technical Institute for the Deaf, Rochester, New York, July 1979.	Provides background to help postsecondary education programs for the deaf and rehabilitation agencies prepare for the expected increase in deaf student enrollments and client caseloads in 1983 and earlier as a result of the 1963-65 rubella epidemic. Discusses maternal rubella and its potential handicapping effects.
5. ***The Physically Impaired Population of the United States***, Martel Firing, Firing and Associates, San Francisco, CA., 1979.	A compilation of statistics derived from National Center for Health Statistics (NCHS) studies on the physically impaired population of the U.S. (uses data from 1976). Concludes that physical impairments affect one of every five people, with one out of every 17 having severe impairments resulting in disabilities. Report is not written by or for the professional statistician.
6. ***Impairments Due to Injury, United States 1971***, U.S. DHEW, Health Resources Administration, Pub. No. (HRA) 74-1514.	Statistics on the prevalence of impairments due to injury. One of a series of statistical reports prepared by NCHS and based on information collected in a continuing nationwide sample of households.
7. ***Prevalence of Selected Impairments, United States 1971***, U.S. DHEW, Health Resources Administration, Pub. No. (HRA) 75-1526.	Prevalence estimates for 10 impairment groups and measures of impact of impairing conditions on the population. Impact of impairment shown by a series of measures. Also provides data on distribution of prevalence of each set of impairments.
8. ***Statistics of Public Elementary and Secondary Day Schools 1977-78***, U.S. DHEW, National Center for Education Statistics, Betty J. Foster and Judi M. Carpenter.	Twenty-fourth annual fall survey of public elementary and secondary day schools conducted by NCES. Shows data for each of 50 states, D.C., outlying areas and 20 largest cities by population size. Presents data on pupils, staff, school district, school housing, anticipated revenue and nonrevenue receipts, and expenditures.
9. ***Identification of Handicapped Students (Aged 12-17) Using Data from Teachers, Parents, and Tests***, U.S. DHEW, Office of the Assistant Secretary for Education, Research Note No. 24, September 1979.	Examines identification of potentially handicapping conditions in the adolescent population. Uses NCHS data from the Cycle III Survey of Youth Aged 12-17. Purpose is to explore variations in the roles of identification and characteristics among 12-17-year-olds identified as potentially handicapped. This study is an attempt to estimate or validate extant data. It is exploratory and comparative in nature.
10. ***Validation of State Counts of Handicapped Children: Vol: II—Estimation of the Number of Handicapped Children in Each State***, U.S. DHEW Office of Education, Bureau of Education for the Handicapped.	Scope of the project was to generate estimates based on a secondary analysis of existing data. Thirty-nine primary sources were reviewed. Data were stratified by age, race, and poverty level.

Data Base	*Abstract*
11. ***Progress Toward A Free Appropriate Public Education—A Report to Congress on the Implementation of Public Law 94-142: The Education for All Handicapped Children Act***, U.S. DHEW Office of Education: State Program Implementation Studies Branch, Bureau of Education for the Handicapped, Pub. No. (OE) 7905003, January 1979.	First in a series of Annual Reports to Congress. Provides description of activities conducted by Bureau of Education for the Handicapped as well as state and local education agencies during the first year of the implementation of P.L. 94-142. Includes findings from relevant studies and court cases.
12. ***Digest of Data on Persons with Disabilities***, U.S. DHEW, Office of Handicapped Individuals, Pub. No. (OHD5) 79-2200.	Summary report providing aggregated data on handicapped and disabled persons. Gives an overview of size and characteristics of this population. Also attempts to clarify definitions and labels applied to the handicapped and disabled population.
13. ***1974 Follow-up of Disabled and Nondisabled Adults No. 1 General Characteristics***, U.S. DHEW Social Security Administration, Office of Policy, Office of Research and Statistics, Pub. No. 13-11725, December 1979.	Examines a variety of characteristics of 2.8 million persons who became disabled between January 1972 and December 1973, and who were still disabled at the time of the 1974 follow-up interview. One-half became severely disabled, unable to work either altogether or regularly. The remainder were partially disabled, able to work regularly but limited in type or amount of work done.
14. Rolf M. Wulfsberg and Richard J. Peterson, ***The Impact of Section 504 of the Rehabilitation Act of 1973 on American Colleges and Universities***, National Center for Education Statistics, June 1979.	Report details findings of NCES study that examined physical facilities of 700 colleges and universities nationwide. Study objectives were: (1) to develop an estimate of funds needed for accessibility, and (2) to examine the relationship between physical plant accessibility and program accessibility.
15. ***Work Disability in the U.S.: A Chartbook***, U.S. DHEW, Social Security Administration, Office of Research and Statistics, Pub. No. 77-11978.	Summarizes highlights of findings from Social Security Administration (SSA) 1972 Survey. Presents information on socioeconomic and medical status of disabled persons.
16. ***Survey of Income and Education (unpublished data)***, Department of Commerce, Bureau of the Census, Washington, D.C. 20233	Provides information in disabilities with data collected from 158,000 households nationwide in 1976. Statistics apply to the noninstitutional population aged 3 and older. Data obtained through personal interviews conducted in all 50 states and District of Columbia.

The raw data on which most of the results in this section are based came from 10 primary sources*:

- The 1970 Census
- The 1976 Census "Survey of Income and Education"
- The 1977 Census "Population Estimates and Projections"
- Two surveys conducted by the National Center for Health Statistics (NCHS) in 1971 and 1976
- A 1977 National Center for Education Statistics (NCES) Survey of elementary and secondary schools
- A 1979 NCES Survey of colleges and universities to

*Four of the studies reviewed were themselves summaries of other reports. These studies relied on some primary sources other than those listed here. The four studies include: two on handicapped children carried out by the Bureau of Education for the Handicapped (items 10 and 11 in figure A); the "Digest of Data" published by the Office of Handicapped Individuals (item 12 in figure A); and the second of two reports by the National Technical Insitute for the Deaf on the 1964-65 maternal rubella epidemic (item 4 in figure A).

determine the impact of section 504 on those institutions.

- Two Social Security Administration (SSA) Surveys (1972 and 1974) on work disabilities
- The 1978 Survey of American college freshmen conducted by the Cooperative Institutional Research Program (CIRP)

In addition to these 10 primary sources, a survey of funding strategies and characteristics of the handicapped student population at approximately 300 colleges and universities was conducted by NACUBO. Some of the results of this study are presented along with the charts and tables in this section to facilitate comparison with other sources. A more complete description of the results of this survey is provided in section III of this report.

Sources of Variation in Results

These primary sources vary widely with regard to the intended use of the information collected, the time at which the study was carried out, and the methods used to gather and analyze the data. There are similar differences among the purposes and methodologies employed in the analyses and tabulations of the secondary sources reviewed. These differences are reflected in the wide variation among this section's estimates of the size and characteristics of the disabled population.

Only two of the data sources were specifically intended to serve the needs of higher education administrators; and even these were not designed to provide comprehensive information on the handicapped student population. Thus, if the information presented in this section is to serve as an effective planning tool for colleges and universities, the sources and implications of differences among the results must be understood. To this end, a brief discussion of the sources of variation is presented here, and more detailed analysis is provided in the narrative accompanying the charts and tables.

The primary sources of differences among the results of these studies can be roughly grouped into four areas: error, purpose, methodology, and time.

1. *Error:* Variation in results can, of course, be introduced by faulty sampling procedures or by misapplication of statistical techniques during analysis of the data. Furthermore, statistics are fundamentally inexact. Some variation will occur even if no mistakes are made. With respect to most of the results summarized in this section, however, a reasonable presumption can be made that errors of either type are insignificant relative to other factors.

2. *Purpose:* Differences in the purposes for which the data is being collected can introduce substantial differences in results. Two crucial variables are largely determined by the intended use of the data. These are the *definitions* used and the *population* that the data are intended to describe.

Definitional Differences: This variable is particularly important with respect to statistics on the handicapped population. The meaning of the term "handicapped" itself is vigorously disputed, as are the meanings of other general terms such as "disabled" and "impaired." Perhaps the fundamental source of disagreement in this area is the question of whether a "handicap" can be objectively (i.e., clinically) defined, or whether it is simply a consequence of the environment within which a person must function. (For example, is a person who is confined to a wheelchair "handicapped" by his medical condition, or is that person "handicapped" only because he/she is forced to live and work in an environment designed for walkers?) The meanings of the terms used to describe specific types of handicaps, such as "visually impaired," "blind," "hearing impaired," "deaf," "mobility impaired," or "learning disabled," are even less clear.

Because of the lack of general agreement on the meaning of these terms, the definition employed in any particular data-gathering effort will, to a great extent, be determined by the purposes for which the data will be used.

Definitions used in the studies reviewed in this section can be loosely grouped under the headings "clinical" (medically defined) and "functional," with the latter being somewhat more frequently employed. "Clinical" definitions, as the name implies, rely on medical standards to distinguish between impaired and nonimpaired individuals. Examples of such definitions include definition and classification of deafness or hearing impairments in terms of threshold hearing levels in decibels, or definition and classification of mobility impairments in terms of the disease or other medical cause of the limitation.

Functional defintions rely on the *effect* rather than the cause of the condition as the basis for determining the existence of a handicap and to distinguish among types of handicapping conditions and levels of severity. These definitions define a person as handicapped (or "partially disabled," "totally disabled," "impaired," or "limited") only if the person is prevented from or limited in performing some activity that he or she would wish to perform if the limiting condition did not exist.

Under this definitional approach, two people with the same medical condition may be classified differently. For example, a truck driver with a bad back may be identified as handicapped because his condition prevents or limits his ability to work, but a college professor with the same ailment may not be identified as handicapped because the condition does not affect his ability to do his job.

Studies using a functional approach are likely to supply more useful information to college and university planners than studies using clinical definitions. The use of functional definitions does, however, result in estimates that are particularly sensitive to variations in questions asked by the study (e.g., a study that focuses only on work disabilities will arrive at very different figures from one that focuses on limitations in the ability to carry out "daily living activities").

Terms such as "disabled" and "limitation" usually imply a functional approach; terms such as "impaired" and "handicapped" are more likely to be used in conjunction with clinical definitions. It should be emphasized, however, that these links between terminology and definitions are far from universally recognized. Furthermore, many studies employ a mix of the two approaches. Such a mix may be either explicit, as is the case when different types of handicaps are identified by different methods, or it may be implicit, as is the case with studies that rely on individual responses to questions such as, "Are you physically handicapped or impaired?" In these instances, the definitional mode employed is determined by the individual respondent, and the results will vary widely by respondents.

Population Sampled: The purpose of a study frequently determines—either directly or indirectly—certain characteristics of the population sampled. The characteristics affected may include the population's age structure, racial makeup, and income distribution. Obviously, such differences among studies will cause differences in results; and inferences with respect to a general population that are based on results of a study that focuses on a specific group are likely to be misleading. Brief descriptions of sample populations accompany each chart in this section. These, along with more complete descriptions provided in the Summary Profiles (appendix A) at the back of this section should enable users to avoid drawing excessively broad inferences and will also serve to explain some of the variations in the results of different studies.

3. *Methodology:* Differences among the methods employed to collect and analyze information on the handicapped population also introduce variations among the results of different studies. The most significant methodological factors influencing the results described in this section are summarized by the following three questions:

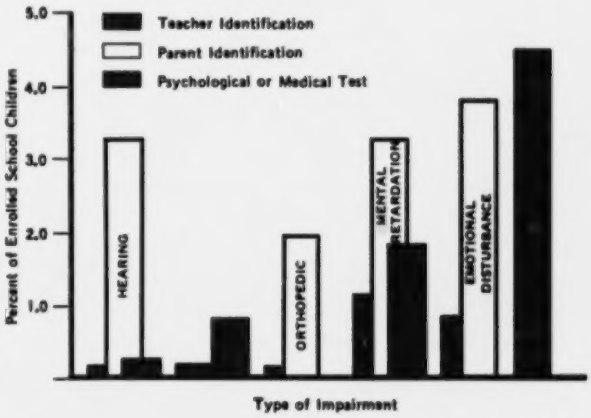
Which questions are asked? Differences in both the content and level of specificity of the questions can cause differences in results. Asking whether or not a person is visually handicapped may elicit a different response than asking whether the respondent is limited in his or her ability to work as a result of a vision impairment; asking the respondent to list or indicate specific activities that he or she is unable to perform because of impaired vision will also produce different results.

Who are the respondents? Large differences can result from variations in judgments about the existence and severity of handicapping conditions. Sources of the data presented in this section include handicapped individuals themselves, parents or other family members, teachers, college administrators, and physicians.

The extent of the variation that can result from a combination of different respondents and different questions is vividly illustrated by the survey results in figure B.

Figure B
Identification of Handicapped Students (aged 12-17) Using Data from Teachers, Parents, and Tests

Source: NCHS, 1979 (No. 9)
Sample: Two independent samples of teachers, parents, and test results for 8000 school children aged 12-17.



The bars represent different estimates of the percentage of school children aged 12-17 who are handicapped by six different conditions. The estimates are based on responses of teachers and parents to two different questions and on results of medical or psychiatric tests.

The following widely varied questions or tests were used to determine the existence and severity of hearing handicaps:

a) Teachers were asked: "Are special resources needed or currently being used for this student?" A positive response was indicated by checking "special facilities for the hard-of-hearing."
b) Parents were asked: "Does he or she have any difficulty hearing?" The response was "yes" or "no."
c) An audiometric test was administered, and the results were classified as "severe hearing loss" for speech thresholds of 50 decibels or more and "mod-

erate hearing loss' for thresholds between 35 and 50 decibels.

How is the data categorized? Variations in age and racial categories used in tabulating survey results, as well as differences in the number and kind of "type-of-handicap" classifications, can make comparison among different data bases difficult. Attempts to interpolate results can be very misleading and at best provide only very rough comparative data.

4. *Changes over time:* The incidence of most handicaps has been fairly consistent over the past ten years. As a result, the data bases surveyed for this section do not reflect great variations in the times at which the data were collected. Nevertheless, significant changes in prevalence rates can occur, and users of the information provided here should be aware of the potential for such changes. Shifts in both the frequency and functional effects of handicaps can be caused by medical and technological changes that eliminate disabling diseases or render certain physical impairments correctable, by social changes that alter the definition of "handicapped" or increase institutional sensitivity to the effects of disabling conditions, or by catastrophic occurrences such as wars, epidemics, and natural disasters.

The implications of one kind of change are illustrated in figure C, which depicts changes in the number of deaf 19-year-olds for the years 1979-85. The very large increases in the size of this population that will occur in 1983 and 1984 are a consequence of a 1963-65 epidemic of maternal rubella.

Figure C
Changes in the National Population of Deaf Persons Aged 19 for the Years 1979-85

Source: National Technical Institute for the Deaf, Report 4 (Data courtesy of the Office of Demographic Studies, Gallaudet College.)*

Sample: Aggregate results based on several demographic data bases.

Year	*National Number of Deaf Persons Aged 19*	*Percentage Change from Base of 2,800*
1979	2,850	2
1980	2,694	—4
1981	2,705	—3
1982	2,873	3
1983	7,232	158
1984	4,802	71
1985	2,886	3

*The Office of Demographic Studies at Gallaudet suggests that these totals do not include an additional 25 percent of unreported deaf persons in this age group.

Unanswered Questions

Within the limitations imposed by the factors identified above the data bases summarized on the following pages provide a considerable quantity of useful information. These sources give general indications of the size and makeup of the total handicapped population as well as some descriptive indicators of the current and potential pool of handicapped college students. As noted earlier, however, these data bases were not assembled with regard to the particular needs of the college and university administrators. An effort designed and carried out specifically to meet those needs could provide answers to a number of questions that are not currently answerable. Those questions include:

- How many handicapped secondary school students can be expected to graduate from high school?
- What percentage of these graduates are potential applicants to higher education institutions?
- Is the size of this group increasing or decreasing?
- What effect, if any, will recent legislation, including section 504, have on the numbers of handicapped college applicants?
- What are the retention rates for handicapped students entering college?
- Do most handicapped individuals who complete college do so in four years? If not, what is the average period between matriculation and graduation?
- What percentage of handicapped students at two-year institutions are enrolled in college preparatory programs? What percentage are pursuing a terminal degree?

A study employing a functional definitional approach that focuses on activities relevant to the successful pursuit of a college or two-year terminal degree would be most helpful in providing answers to these questions. Such a study could also significantly enhance the ability of colleges and universities to respond productively to to the educational needs of the nation's handicapped population.

Summary of Major Conclusions

The following conclusions and implications were selected from the data presented on the following pages:

- Estimates of the percentage of the total U.S. population disabled or impaired range from 6 percent to 20 percent, or from 13,000,000 to 43,000,000 people.
- The studies reviewed disagree with regard to the regional distribution of handicapped people, and no clear conclusions can be drawn.
- The probability of being handicapped increases with age. Estimates of the percentage of the handicapped population aged 55-64 range from 35 percent to 50 percent.

- The frequency of emotional disturbance, mental retardation, or speech impairments declines with age, while the frequency of medical impairments, arthritis and rheumatism, hearing and visual impairments, and heart trouble increase with age.
- It is impossible to draw any clear conclusions with regard to the relationship between sex and incidence of handicaps.
- Handicaps are moderately more frequent among blacks than among whites.
- The frequency of handicaps decreases markedly with increasing income. In 1971, approximately 52 percent of all families with handicapped members had incomes of less than $7,000. This compared with a figure of 23 percent for the total population at that time.
- The frequency of handicaps decreases markedly with increasing education. Estimates of the percentage of handicapped persons with less than an eighth grade education range from 10.7 percent to 44 percent. Only 5 percent of the handicapped population has completed college.
- The U.S. Bureau of Education for the Handicapped estimates that approximately 11-12 percent of all elementary and secondary school children are handicapped. Approximately 7.5 percent of all primary and secondary school students are served by special programs.
- There are large differences in the number of college and university students who identify themselves as handicapped and the number identified as handicapped by college administrators.
- Two-year colleges serve the highest proportion of handicapped students. There are no clear differences between public and private institutions or among regions of the country with regard to the percentages of handicapped college students enrolled.

Charts and Tables

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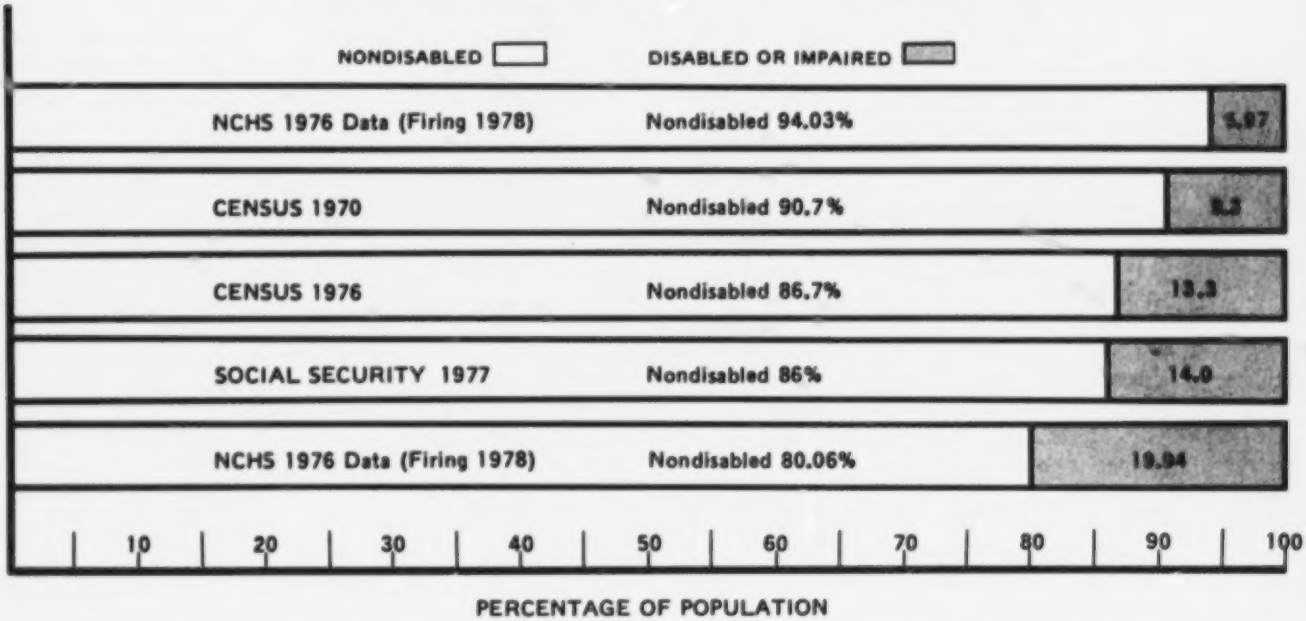
Note: The numbers in parentheses following "Source" for each of the following tables refer to numbers used for the descriptions of each study in figure A and the Summary Profiles (appendix A) at the back of this section.

Figure 1: Percentage of U.S. Population Disabled or Impaired: Results of Five Studies

Sources: National Center for Health Statistics; 1976 Data (Firing, 1978) (5)
1970 Census ("One-in-Eleven Handicapped Adults in America") (3)
Bureau of the Census Survey of Income and Education; 1976 (16)
Social Security Administration Survey; 1972 (15)

Samples: NCHS: 40,000 households containing 113,000 persons (excludes institutionalized and armed forces populations)
Census, 1970: 5 percent sample of adult noninstitutionalized U.S. population (aged 16-64) (121,000,000)
Census, 1976: 158,500 households (did not include dormitories, barracks, etc.)
SSA Survey: 18,000 interviews with noninstitutionalized adults (aged 20-64)



[1] See discussion below for explanation of definitional differences.

The range of estimates of the size of the disabled population indicated by this chart is largely a result of differences in identification methods among the four studies. The following definitions and identification methods were used:

NCHS—Measured two levels of impairment, "disability" and "impairment." A "disability" was defined as a functional limitation in activity; an "impairment" was defined as a chronic or permanent defect. An "impairment," so defined, may not result in a limitation of activity. The top bar of the above chart indicates individuals with "disabilities," and the bottom bar indicates those with "impairments." The NCHS study relied on self-identification of both the existence and effect of impairment or disability.

Census, 1970—Counted adults with disabilities that interfere with work ("work disabilities"). Included only disabilities that had persisted for six months or more. Disabilities were identified by heads of households.

Census, 1976—Counted adults (aged 18-64) with disability lasting six months or more. Included disabilities that prevent person from working at all (5.8 percent), those that prevent person from working regularly (1.7 percent) and those that do not interfere

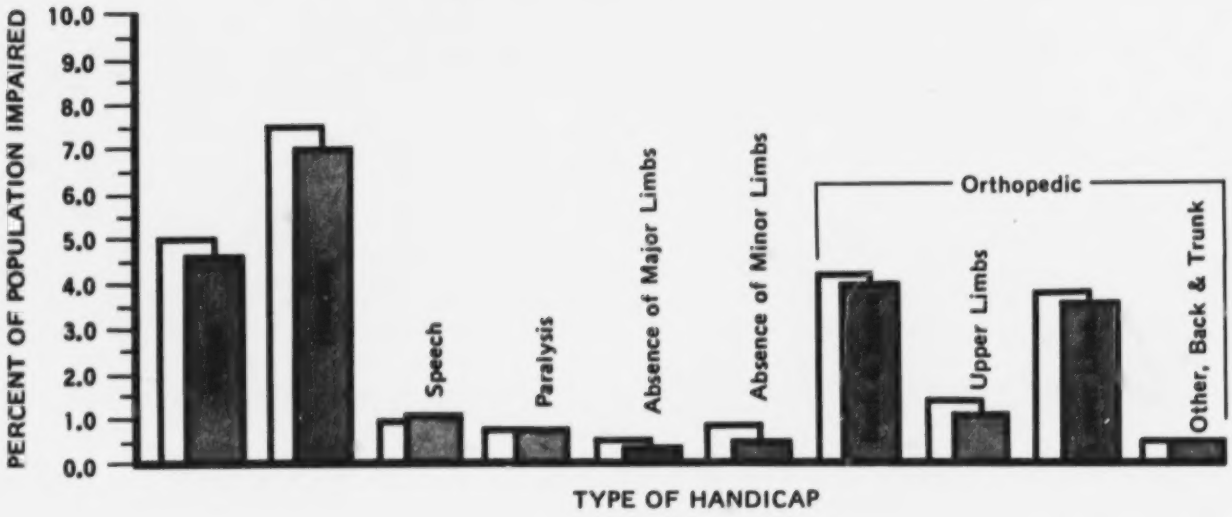
with ability to work (5.8 percent). Identification was by personal interview that focused on functional capabilities. **Note:** The 1976 survey also provided an estimate of the percent of the total noninstitutionalized U.S. population aged 3 to 64 suffering from a "limiting health condition." This figure was **14.1 percent**.

SSA, 1972 Data (1977 Report)—Counted adults (aged 18-64) with disabilities defined similarly to those counted in the Census survey. Breakdown was: unable to work at all or regularly—7.0 percent; able to work regularly but forced to change jobs—3.0 percent; and able to work regularly at the same job, but subject to some limitations—4.0 percent. Identification was by personal interview that focused on functional capabilities.

Figure 2: Percent of Noninstitutionalized U.S. Population Impaired or Disabled by Type of Handicap

Sources: NCHS, 1971 Data (7)
NCHS, 1976 Data (Firing Report, 1978) (5)

Samples: 1971: 42,000 households with 134,000 persons (institutionalized and armed forces population excluded)
1976: (Firing): 40,000 households with 113,000 persons (institutionalized and armed forces populations excluded)



Source: NCHS 1971
Source: NCHS 1976

In addition to the results displayed above, the 1976 Census also provided data on the distribution of handicaps by type. The categories used by the Census were defined somewhat differently and are therefore not directly comparable to the NCHS results. Three of the Census categories—vision, hearing, and speech—are, however, roughly comparable. The results (as percentages of the noninstitutionalized population aged 3-64) were as follows:

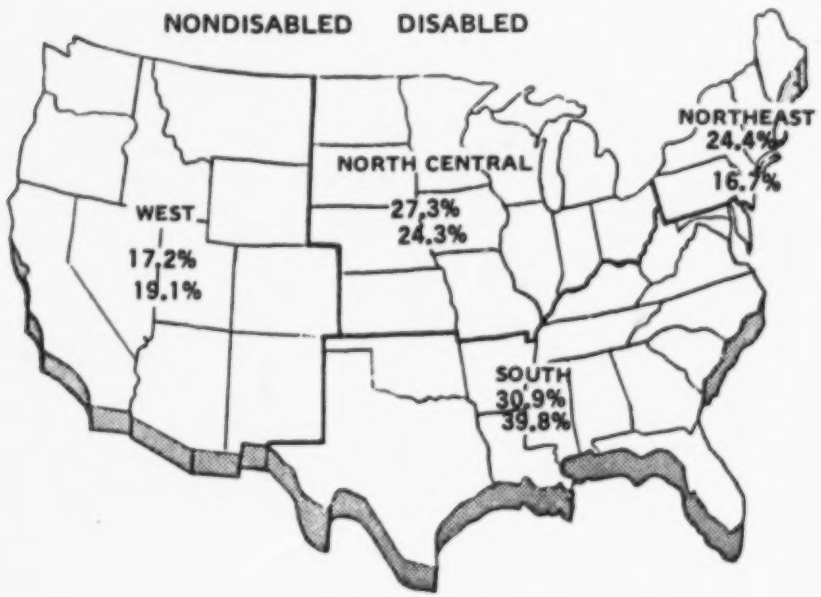
Vision ("Serious Difficulty in Seeing or Blind") 4.6%
Hearing ("Hard of Hearing or Deaf") 4.3%
Speech ("Speech Impairment") 1.6%

More detailed presentations of this information may be found in figures 6, 10, and 11.

Figure 3: Regional Distribution of Disabled and Nondisabled Population

Source: Social Security Administration, 1974 Data (1977 Report) (13)

Sample: 16,030 noninstitutionalized adults (aged 20-64)



Source: Social Security 1974

This figure compares the distribution of disabled and nondisabled adults by region. The numbers in color are percentages of the adult U.S. disabled population residing in each region. The numbers in black are the percentages of the total noninstitutionalized adult population in each region. "Disability" was defined in terms of effect of impairment on ability to work, but figures shown include both totally and partially disabled.

Both the 1976 Census and the 1972 Social Security Surveys also provided estimates of the regional distribution of the disabled population as a percentage of the population of each region. These results were as follows:

	1976 Census Survey	1972 Social Security Survey
Northeast	11.7%	14%
South	15.5%	17%
North Central	12.5%	14%
West	12.5%	14%

Both surveys focused on "work disabilities," but there were some definitional differences. The above studies agree that the incidence of people with disabilities is highest in the south, both as a percentage of that region's population and as a percentage of the disabled population. However, the 1976 NCHS study found the rate slightly higher in the northeast than in any other region.

Figure 4: Handicapped Population by State

Sources: NCHS, 1976 (Firing and Associates Report) (5)
Census, 1970 ("One-in-Eleven Handicapped Adults in America") (3)
Census, 1976 (Survey on Income and Education)

Samples: NCHS: 40,000 households (113,000 persons)
Census, 1970: 6,000,000 adults (5 percent sample of 121,000,000 noninstitutionalized adults)
Census, 1976: 158,000 households

	FIRING[1] NCHS 1976	ONE IN[2] ELEVEN 1970 Census	FIRING[3] NCHS 1976	CENSUS[4] 1976	CENSUS[5] 1976
U.S.	5.97	9.30	20.39	14.10	5.80
NORTHEAST					
Connecticut	6.08	7.20	20.60	12.00	3.90
Maine	6.14	9.10	20.54	13.80	5.60
Massachusetts	6.17	8.10	20.43	12.40	4.40
New Hampshire	5.98	7.70	20.28	12.40	4.10
New Jersey	6.14	7.60	20.79	12.80	4.80
New York	6.20	8.00	20.61	11.80	3.70
Pennsylvania	6.31	8.70	20.87	14.60	5.80
Rhode Island	6.38	8.40	20.77	14.30	5.30
Vermont	5.92	10.10	20.06	13.70	5.30
NORTH CENTRAL					
Illinois	5.94	8.40	19.83	13.10	5.20
Indiana	5.85	8.70	20.28	13.40	4.90
Iowa	6.20	9.00	20.51	12.00	3.90
Kansas	6.22	8.80	20.44	13.10	4.20
Michigan	5.69	9.50	20.22	13.50	6.10
Minnesota	5.89	8.50	20.09	13.10	4.00
Missouri	6.26	10.00	20.39	15.00	6.10
Nebraska	6.15	8.80	20.35	11.10	3.00
North Dakota	5.99	8.30	20.55	12.40	3.50
Ohio	5.90	9.10	20.37	14.10	5.90
South Dakota	6.13	8.80	20.61	12.90	3.60
Wisconsin	5.99	8.00	20.33	12.10	3.70
SOUTH					
Alabama	5.90	11.50	20.28	18.30	7.90
Arkansas	6.27	13.60	20.52	20.20	8.20
Delaware	5.69	7.80	20.16	12.60	4.50
Dist of Col	5.91	9.80	19.86	15.50	7.50
Florida	6.90	10.80	20.82	15.90	6.60
Georgia	5.61	11.30	19.99	19.10	9.50
Kentucky	5.95	11.40	20.34	19.00	8.40
Louisiana	5.59	10.60	20.08	17.70	7.80
Maryland	5.69	8.30	20.22	11.90	4.40
Mississippi	5.82	12.50	20.16	18.80	9.50
North Carolina	5.80	10.40	20.22	15.60	6.80
Oklahoma	6.16	12.20	18.71	18.00	6.20
South Carolina	5.56	10.30	20.09	18.20	8.20
Tennessee	6.00	10.90	20.31	17.50	8.40
Texas	5.69	9.10	20.13	13.50	4.90
Virginia	5.71	8.50	20.19	14.00	5.80
West Virginia	6.23	12.20	20.81	21.90	11.70
WEST					
Alaska	4.48	6.40	19.42	7.30	2.10
Arizona	5.84	10.70	20.28	15.10	5.70
California	5.89	9.70	20.34	13.20	5.80
Colorado	5.55	8.80	19.91	11.40	3.90
Hawaii	5.40	8.00	20.22	9.80	3.50
Idaho	5.72	10.90	20.43	13.80	4.50
Montana	5.88	10.00	20.55	14.40	5.00
Nevada	5.63	8.20	20.54	12.00	3.90
New Mexico	5.42	9.70	20.01	12.70	6.30
Oregon	6.10	11.00	20.48	14.30	4.30
Utah	5.18	8.00	19.75	11.80	3.70
Washington	5.91	9.60	20.26	13.10	4.70
Wyoming	5.67	8.80	20.43	11.80	3.70

[1]Figures are for all age groups. Counted only impairments "causing limitation" (i.e. functional disabilities).
[2]Figures are for adults aged 16-64. Counted only work disabilities lasting six months or more.
[3]Figures are for adults aged 18-64. Counted all individuals with "any impairment."
[4]Figures are for ages 3-64. Counted all individuals with a "limiting health condition."
[5]Figures are for ages 16-64 only. Counted only individuals with work disabilities.

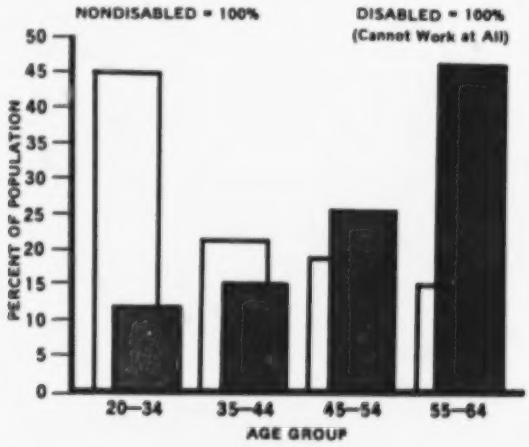
Variations among the figures presented in this table are again at least partially explained by differences in the definitions used and in the population for which the figures are estimated.

The 1970 Census results appear to support the implications of the 1976 Census and the 1974 Social Security surveys with regard to high prevalence rates in the south. The NCHS figures, however, do not support this conclusion, indicating instead a slightly higher rate in the northeast.

Figure 5: Age of Disabled and Nondisabled Population: Results of Two Studies

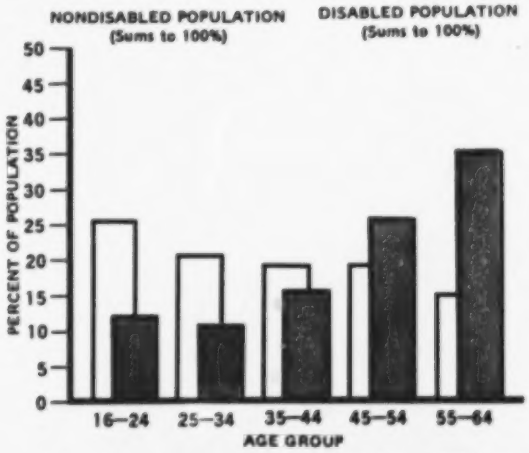
(a) Social Security Survey, 1974 (13)

Sample: 18,000 adults (aged 20-64)



(b) Census, 1970 (3)

Sample: 6,000,000 adults (aged 16-64)



The definitions used in these two studies were slightly different, though both studies focused on "work disabilities." In addition, the SSA Survey excluded four years of the age group included in the Census results. Nevertheless, both studies clearly indicate a strong positive link between age and frequency of handicaps. The largest discrepancy between the two studies is for ages 55-64. The Census results indicate that approximately 35 percent of the disabled population is in this age group; while the SSA Survey indicates a figure of approximately 45 percent. This difference may be due to the fact that the SSA Survey specifically excluded people with "partial disabilities"—that is, disabilities that necessitated a change in jobs, but allowed the individual to work regularly. The Census, on the other hand, included all disabilities that interfered with the person's ability to work.

Figures 6 and 7 display the breakdown of handicaps by type of handicap for different age groups.

Figure 6: Handicapped Population by Age and Type of Handicap

Source: Census, 1976 (Survey of Income and Education) (16)

Sample: 158,000 households

HEALTH CONDITION							
Speech Impairment	3.1	1.9	2.4	1.3	1.3	1.2	1.6
Seriously Emotionally Disturbed	4.0	3.6	4.3	3.6	3.1	1.8	2.9
Mentally Retarded	10.6	8.0	6.1	3.5	2.5	0.9	3.5
Hard of Hearing/Deaf	3.3	4.3	2.7	3.1	4.0	5.6	4.3
Serious Difficulty in Seeing or Blind	4.7	3.4	4.2	4.0	4.5	5.3	4.6
Digestive Disorder	3.0	4.8	5.4	6.4	6.6	7.5	6.4
Orthopedic Handicap	9.7	12.2	8.7	8.7	8.4	8.1	8.7
Chronic Nervous Disorder	5.2	8.5	10.8	10.3	10.6	9.0	9.4
Respiratory Disorder	10.3	7.2	9.1	8.6	9.9	12.4	10.4
Arthritis/Rheumatism	3.5	4.7	7.7	11.2	20.2	29.0	18.4
Any Heart Trouble	3.9	5.2	7.8	12.6	21.8	29.6	19.4
Trouble With Back or Spine	15.8	22.9	26.9	27.1	23.8	20.6	22.6
Any Other Health Condition[1]	35.8	31.9	29.7	28.3	23.5	20.7	25.4
AGE	18—24	25—29	30—34	35—44	45—54	55—64	All Ages[2]

[1]"Other" not defined.
[2]Totals may be more than 100 percent because of multiple causes of disability.

Figures in this table are estimates of the percentage of total *disabled* population in each age group with work disabilities caused by each condition.

Note that the incidence of speech impairments, emotional disturbance, and mental retardation declines with age. The frequency of work disabilities resulting from visual and hearing impairments increases moderately with age. To the extent that the results of the 1976 Census are comparable to those of the 1970 Census and the 1972 Social Security Survey (which also measured "work disability"), the strong relationship between increasing age and frequency of disability depicted in figures 5(a) and (b) appears to be largely due to substantial increases in the frequency of heart trouble, arthritis and rheumatism, and back or spine troubles.

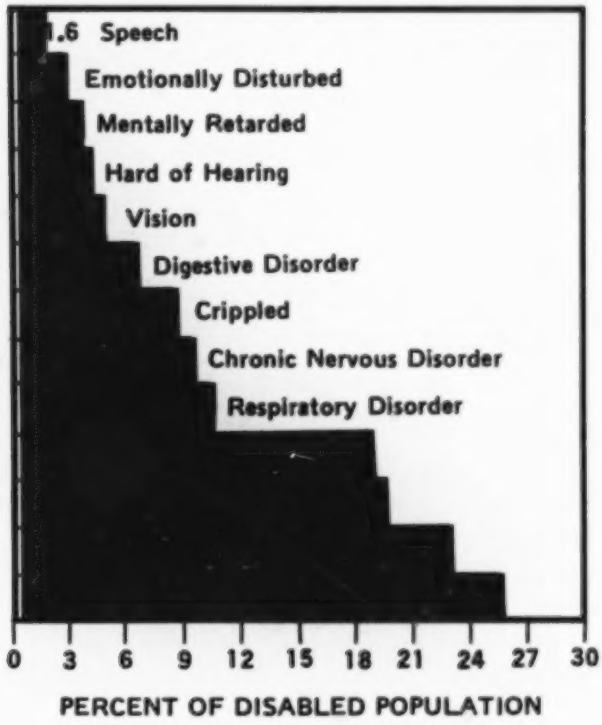
Figure 7(a) graphically depicts the results shown in the "all ages" column of figure 6. Figure 7(b) shows the 1976 Census results for "limiting health conditions" among children aged 3-17. The numbers for the 3-17 age group bear out the conclusion that speech impairments, emotional disturbance, and mental retardation are more frequent at young ages and that hearing and vision impairments increase in frequency with age.

Figure 7: Makeup of the Handicapped Population by Type of Handicap

Source: Census, 1976 (Survey of Income and Education) (16)

Sample: 158,000 households

(a) Population Aged 18-64 with Work Disabilities



[1] Total exceeds 100% because of multiple causes of disability.

(b) Population Aged 3-17 with "Limiting Health Conditions"

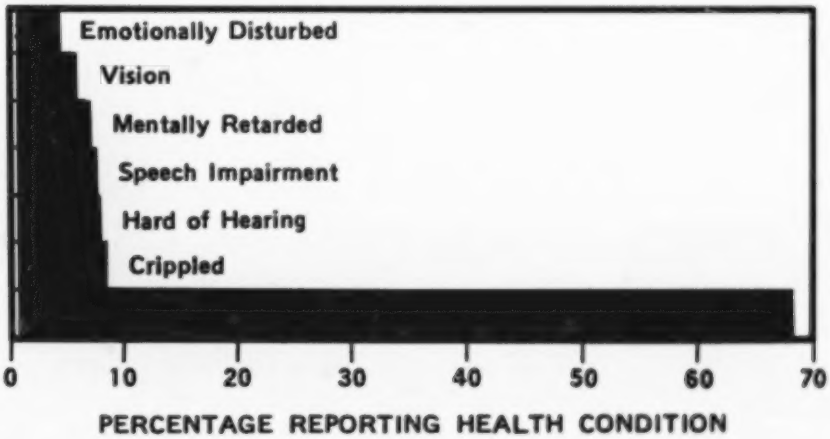
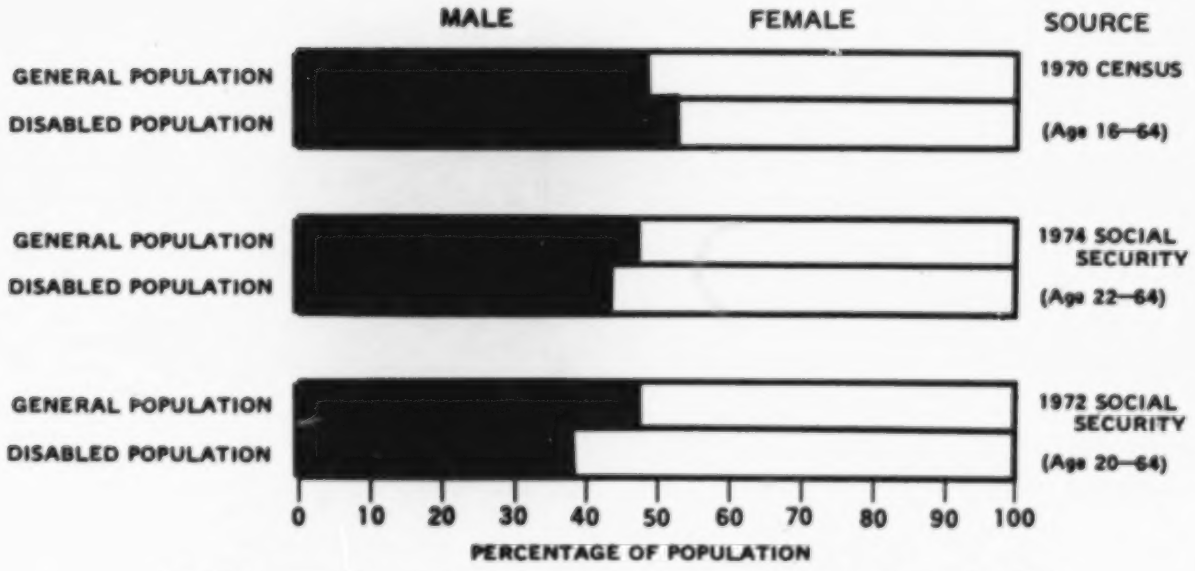


Figure 8: Disabled and Nondisabled Population by Sex

Sources: Census, 1970 ("One-in-Eleven Handicapped Adults in America") (3)
Social Security Survey, 1974 (13)
Social Security Survey, 1972 (15)

Samples: Census: 6,000,000 adults; aged 16-64
SSA, 1974: 16,000 adults; aged 22-64
SSA, 1972: 18,000 adults; aged 20-64



Variation among these estimates cannot be entirely explained by differences in definitions and sample populations. All three studies focused on work disabilities in the adult population. The differences may be at least partially explained, however, by differences in information collection techniques. (The Census used questionnaires, while the SSA survey relied on personal interviews.) The "One-in-Eleven" report speculates that the excess of men reporting a disability may be due to the fact that women are less likly to identify a work disability.

This possibility is subject to some question, however, since the 1976 Census Survey (which also relied on personal interviews) indicates that the women reported a disability that interfered with work more frequently than did men. When disabilities that do not interfere with work are included, the 1976 Census results show an even split between men and women (13.3 percent each, calculated as a percentage of the adult male and female populations). The 1976 Census figures for "any limitation" in the population aged 3-64 indicate an overall distribution of 13.7 percent of the male population, and 14.5 percent of the female population.

With regard to the distribution of disabilities by sex *and* age, there are again discrepancies among various studies. The 1970 Census indicates a higher rate of disabilities among younger (adult) women than among men in the same age groups and a lower rate among women aged 55 to 64. (Rates were calculated as percentages of the total disabled population of each sex.) The NCHS data, as interpreted by the Firing and Associates study, indicate precisely the opposite conclusion.

Figure 9 presents estimates of the 1976 Census Survey on the distribution of disabilities by type and sex.

Figure 9: Disabled Population by Sex and Type of Handicap

Source: Census, 1976 (Survey of Income and Education) (16)

Sample: 158,000 households (figures are for respondents aged 3-64)

	TOTAL	MALE	FEMALE
Mentally Retarded	3.1	4.1	2.2
Hard of Hearing	5.9	6.7	5.2
Deaf	1.3	1.3	1.3
Speech Impairment	2.2	3.1	1.5
Serious Difficulty in Seeing or Blind	7.0	6.3	7.5
Seriously Emotionally Disturbed	2.5	2.7	2.3
Orthopedic Handicap	8.5	9.5	7.5
Any Other[1]	69.5	66.3	72.5
TOTAL	100.0	100.0	100.0

[1] "Other" Category Not Defined.

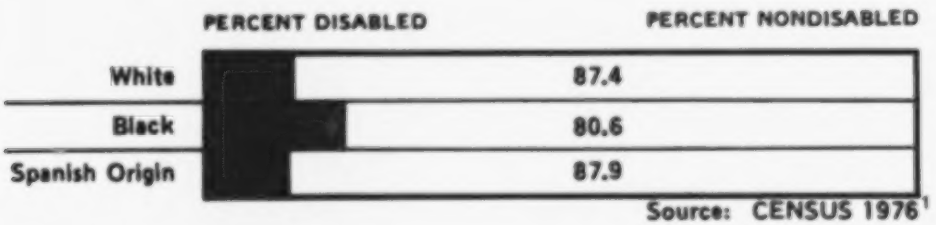
These figures appear to indicate noticeably higher rates of mental retardation, emotional disturbance, orthopedic handicaps, and hearing and speech impairments among males. Given the higher rates of incidence of these impairments among younger individuals, a higher proportion of disabilities among young males might be expected. As noted above, this expectation is not met; in fact, the inclusion of ages 3-17 in the Census figures actually *increases* the overall percentage of females with disabilities.

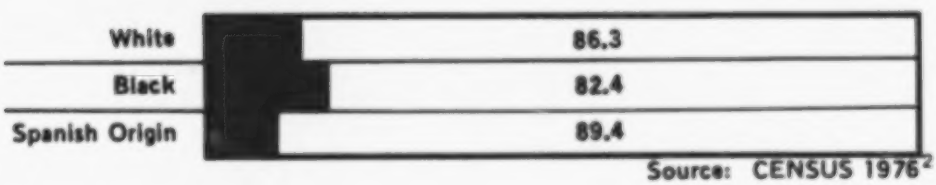
Essentially, the differences among the several studies reviewed here are such that no firm conclusions can be drawn with respect to the relationship between sex and the frequency of disabilities.

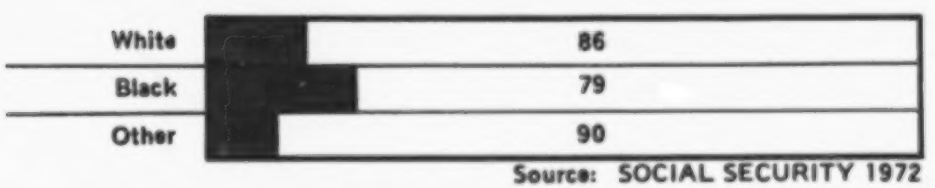
Figure 10: Disabled Population by Race: Results of Three Studies

Sources: Census, 1976 (Survey of Income and Education) (16)
Social Security Survey, 1972 (13)

Samples: Census: 158,000 households
SSA, 1972: 18,000 adults aged 20-64







[1]Figures for work-disabled adults, aged 18-64.
[2]Figures for "limitation of activity," aged 3-64.

The indications of all of the studies reviewed are that the frequency of impairments is higher among blacks than among whites. Care should be taken in interpreting these results, however. The statistical truism that correlation does not imply causation should be noted. There is a very strong relationship between income and frequency of disability, for instance, (see figures 11 and 12) and, in the absence of a data base that provides statistics by *both* race and income, it is impossible to determine whether apparent differences between frequency rates among blacks and whites are directly related to race, or whether they are simply the reflection of relationships between disability rates and other factors directly linked with race.

Figure 11: Family Income of Handicapped Persons

Source: NCHS, 1971 (7)

Sample: 42,000 households (134,000 individuals)

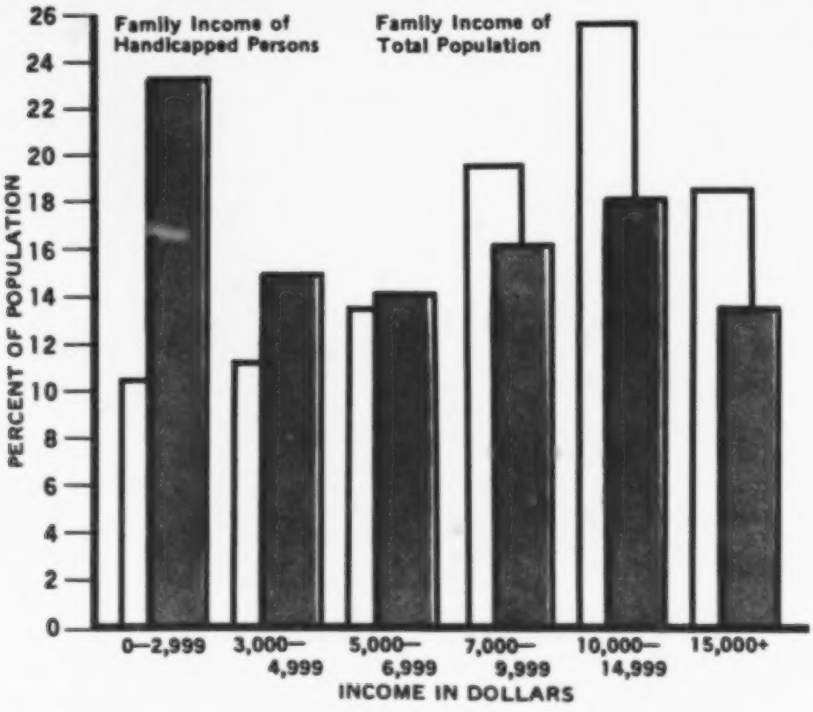
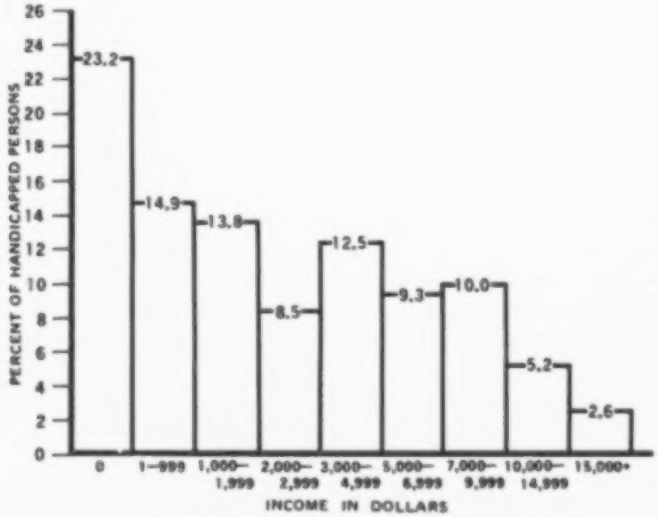


Figure 12: Individual Income of Handicapped Persons

Source: Census, 1970 (3)

Sample: 6,000,000 adults, aged 16-64

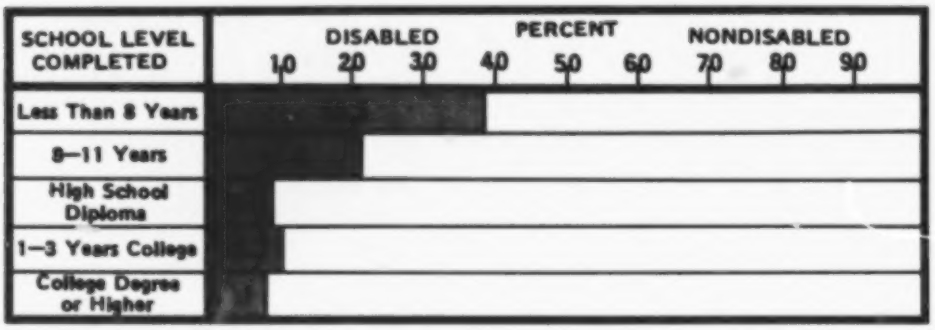


In spite of the differences in definition of handicap and information collection methods, these two studies show a strong negative relationship between income and incidence of handicaps. In addition to the results desplayed here, the 1976 Census Survey estimated that the proportion of the disabled population with incomes below the poverty line was more than twice the proportion among the nondisabled population (28.7 percent compared to 11.8 percent).

Figure 13: Educational Level of Disabled and Nondisabled Populations (Disabled or Nondisabled Percentage by Grade Level)

Source: Census, 1976 (16)

Sample: 158,000 households



Estimates depicted on this chart reflect a consensus among all studies reviewed with regard to the general conclusion that disabled persons tend to have less education than do nondisabled persons. It should be noted, however, that the range of specific estimates of percentages by grade level is large. The 1974 Social Security Survey estimated that 44 percent of all totally disabled and 25 percent of all partially disabled adults had less than 8 years of education. The 1970 Census, on the other hand, indicated that approximately 22 percent of the adult population with disabilities that interfere with work had fewer than 8 years of school.

Figure 14 displays the results of the 1974 Social Security Survey.

Figure 14: Educational Levels of Totally Disabled, Partially Disabled, and Nondisabled Populations

Source: Social Security Survey, 1974 (15)

Sample: 16,000 adults, aged 22-64

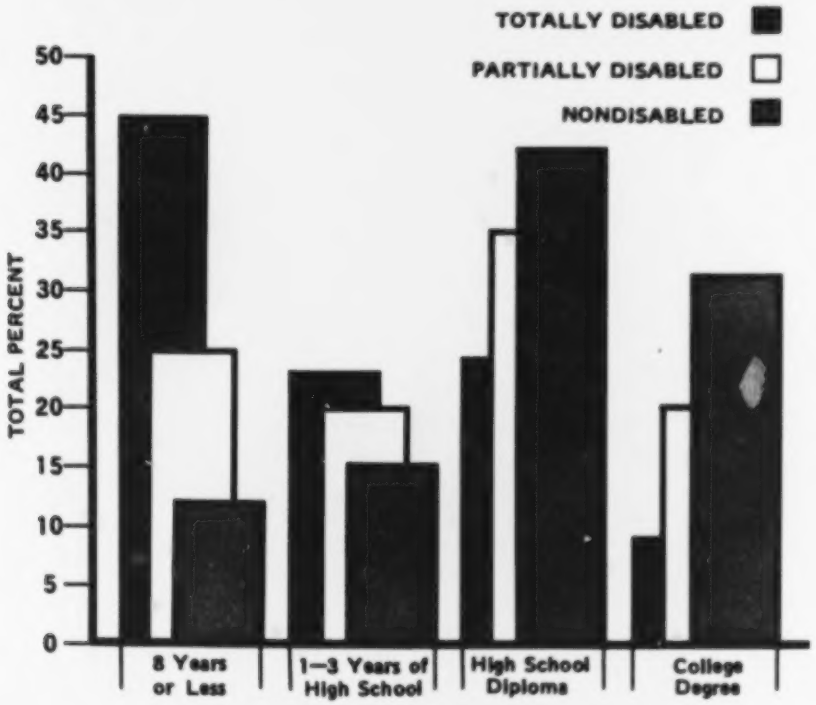
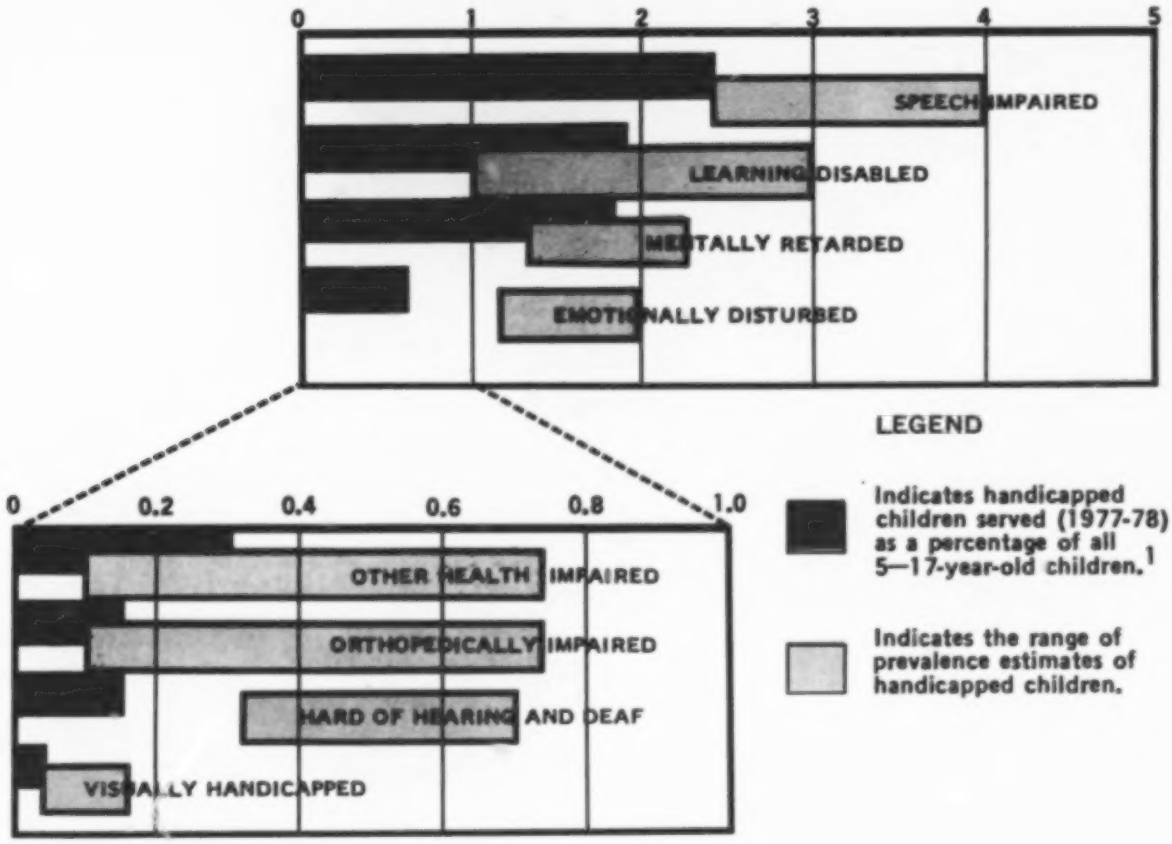


Figure 15: Estimated Frequencies of Disabilities Among 5-17-Year-Olds, Compared with Percentage Served by Special Educational Programs

Source: Bureau of Education for the Handicapped (BEH), 1979 ("Progress Toward a Free Appropriate Public Education") (11)

Sample: Children counted by state education agencies under Public Laws 89-313 and 94-142.

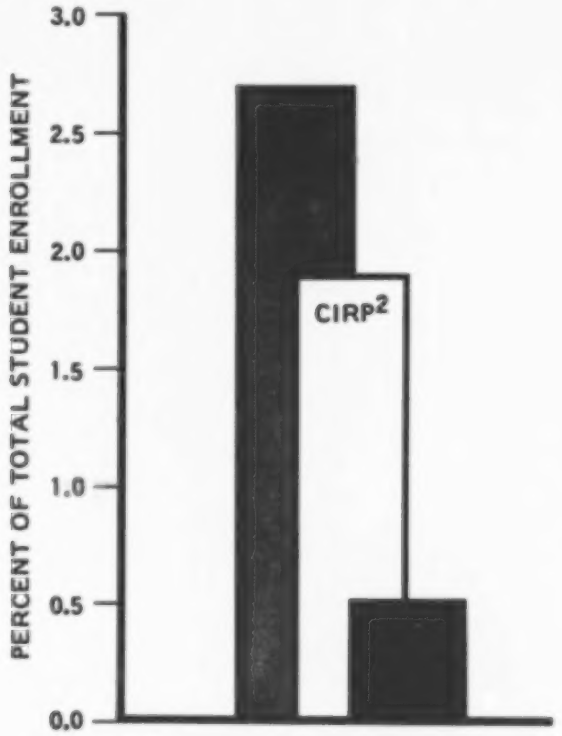


This figure is intended to provide an indication of both the range of prevalence estimates among school-age children and of the size of the population currently served by special programs in primary and secondary schools. Stanford Research Institute, in a study of various prevalence estimates carried out for BEH, found a range of estimates for the total handicapped school-age population of 4.9 million to 10.2 million. If the estimated ranges are accurate, the indication is that a significant number of children with hearing impairments and emotional disturbances are not currently being served by special programs. Overall, BEH estimates that approximately 11-12 percent of the school-age population is handicapped. As of 1978, 7.4 percent of all school children were being served by special programs.

Figure 16: Handicapped Student Enrollment as Percentage of Total Student Enrollment at Colleges and Universities

Sources: Cooperative Institutional Research Program (CIRP), 1978 ("The American Freshman") (1)
National Center for Education Statistics (NCES), 1979 ("Impact of Section 504") (14)

Samples: CIRP: 187,000 freshment at 383 institutions
NCES: 700 institutions



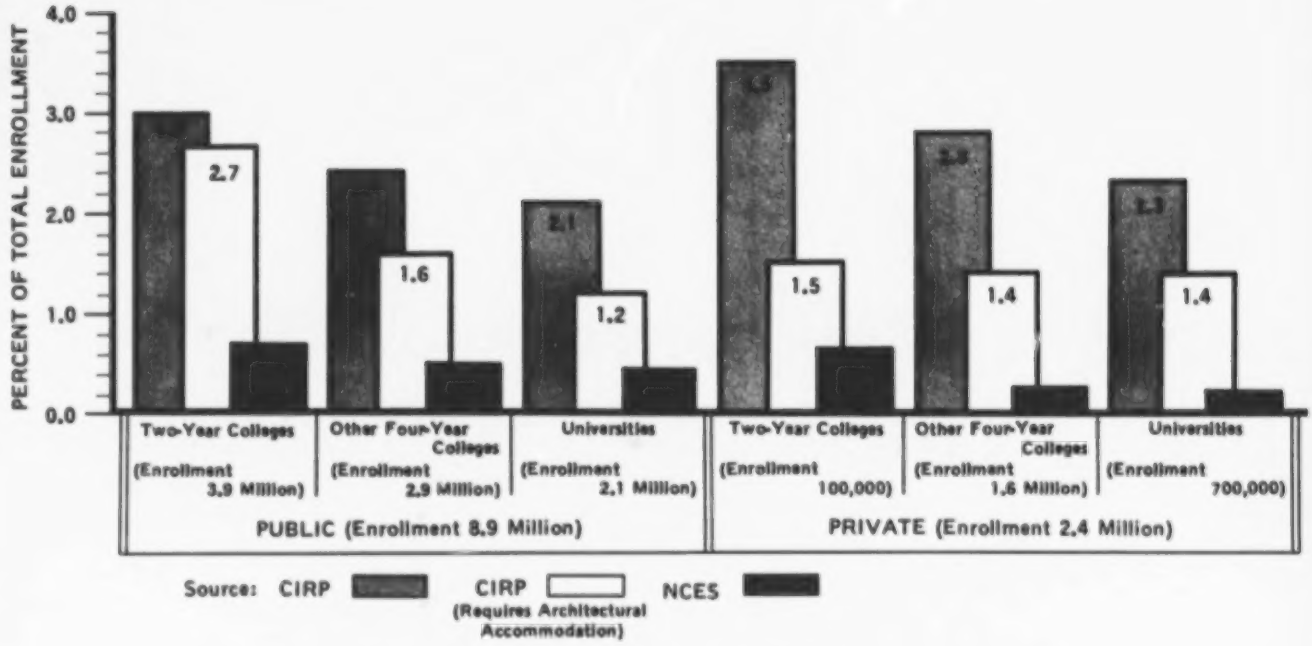
[1]Responses to question: Do you consider yourself physically handicapped?
[2]Responses to question: Does your handicap require architectural modification?
[3]Identified as handicapped by administrators.

The wide range of estimated prevalence rates displayed here is largely a consequence of differences in identification methods. As noted above, the CIRP study relied on self-assessment of handicap by the student, while the NCES survey used information obtained from college administrators. The NACUBO survey discussed in section II of this report also relied on estimates provided by administrators, and its results are very similar to those of the NCES survey, ranging from 0.7 percent to 0.87 percent for the years 1976 through 1980.

Figure 17: Handicapped Enrollment as Percentage of Total Enrollment by Type and Governance of Institution

Sources: CIRP, 1978 ("The American Freshman") (1)
NCES, 1979 (Impact of Section 504) (14)

Samples: CIRP, 187,000 freshmen at 383 institutions
NCES, 700 institutions



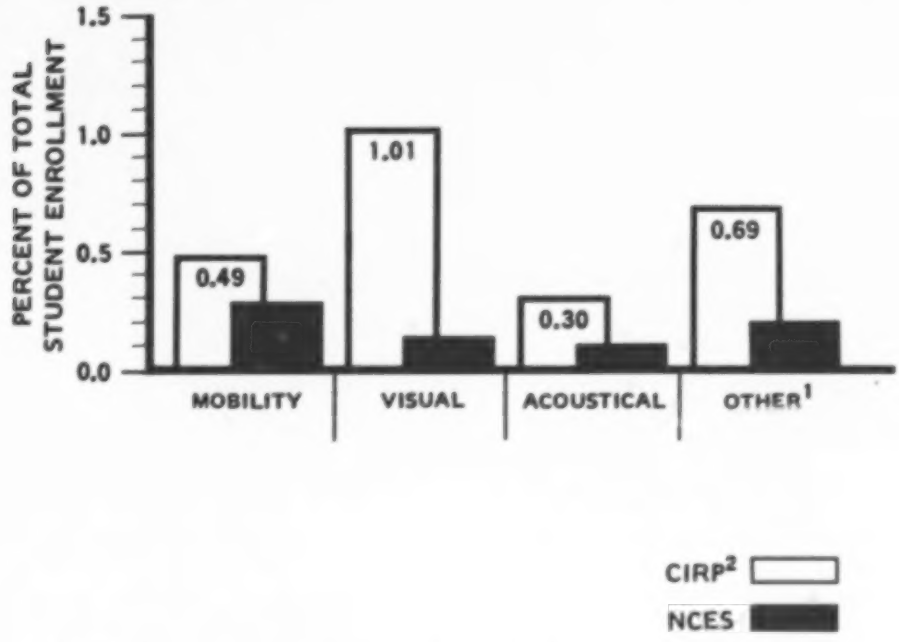
Variation among estimates displayed here again reflects differences in identification methods and definition of handicap. These studies and the NACUBO survey discussed in section II indicate relatively high percentages of handicapped students at two-year institutions. The NACUBO study found prevalence rates among public two-year institutions for 1979-80 of 1.1 percent (for large institutions) and 0.56 percent (for medium and small institutions). The NACUBO survey did not include private two-year institutions as a basis for comparison. The NACUBO figures for four-year colleges and universities ranged from 0.5 percent to 0.9 percent (the lowest estimated rates were for private colleges and universities and the highest for medium and large public institutions).

It appears reasonable to assert that, at present, handicapped students are more likely to attend two-year colleges than four-year colleges or universities. The NACUBO study suggests that the percentage of handicapped students at public institutions is somewhat higher than at private ones, but this conclusion is not clearly supported by the CIRP and NCES studies. It should also be noted that this situation may change as more institutions provide increased opportunities for handicapped students in response to section 504 regulations.

Figure 18: Handicapped Student Enrollment as Percentage of Total Enrollment by Type of Handicap

Sources: CIRP, 1978 (1)
NCES, 1979 (14)

Samples: CIRP, 187,000 freshmen at 383 institutions
NCES, 700 institutions



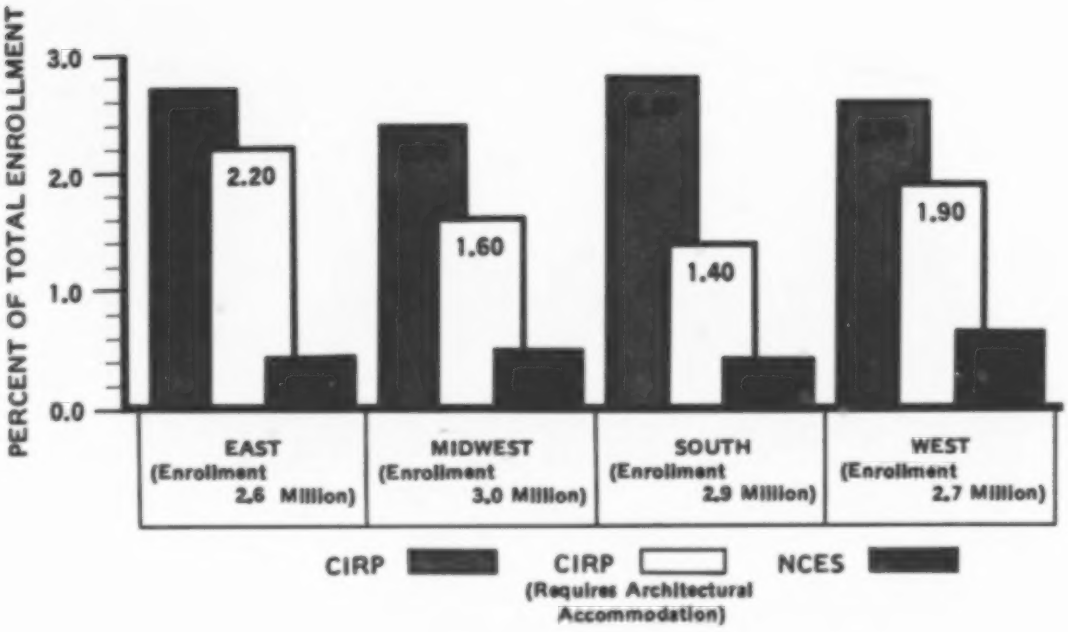
[1]Includes speech impaired, learning disabled, multiple handicapped, etc.
[2]These results are for students identifying themselves as handicapped, whether or not they need architectural accommodation.

The differences between the CIRP and NCES studies are noticably exaggerated with respect to their estimates of the distribution of handicap by type. The effects of administrative identification versus self-identification of handicap are particularly noticeable with regard to visual impairments. Interestingly, the results of the NACUBO survey described in section II also relied on counts of handicapped students provided by administrators and agreed very closely with the estimates of the NCES study. The NACUBO figures were as follows:

Mobility	.29%
Vision	.08%
Acoustical	.06%
Other	.30%

It is unclear whether this difference reflects an administration focus on those handicaps that require modification of physical facilities, or whether it simply indicates that barriers that stimulate handicapped students to identify themselves to school officials are less severe for visually impaired students than for other handicapped students. Nevertheless, these results do clearly indicate that the number of students who view themselves as handicapped is considerably greater than the number so identified by administrators.

Figure 19: Handicapped Student Enrollment as Percentage of Total Enrollment by Region



Variations among results depicted on this chart are not readily explained in terms of definitional and methodological differences in the studies. While the CIRP estimates of all impairments appear to support the Social Security and Census Surveys (i.e., that the south has slightly higher prevalence rates than other regions), this implication is not supported by any of the other results. Differences among regional prevalence rates are in all cases relatively insignificant.

Appendix A
Summary Profiles of National Data Bases

1. The American Freshman: National Norms for Fall 1978 (CIRP I & II)

Definition of Handicap

Self-defined. Participants were asked: (a) Do you consider yourself physically handicapped? If yes, what type of handicap do you have? Hearing, speech, visual, orthopedic, learning disability, some other handicap (unspecified)? Does your handicap require architectural accommodations (wheelchair ramps, elevators, etc.)?

Universe, Type of Data

A group of 187,603 students who were first-time, full-time freshmen from 383 institutions. Data available by sex, type of institution/selectivity, and geographic region. Reported in percentage form.

Data Collection Methodology

Student Information Form (SIF) was administered during registration, freshman orientation, or first few weeks of classes. SIF is designed to elicit biographic and demographic data, as well as career and educational aspirations and attitudes, among others. A question on handicaps was included on the SIF for the first time in 1978.

Findings

2.7 percent of the students considered themselves physically handicapped. The handicaps reported, in order of frequency listed, were: visual, orthopedic, other, hearing, learning disability, and speech. Predominantly black colleges had a higher response rate. The two-year colleges had more students who viewed themselves as handicapped, and a higher number of such students attended private two-year colleges. The south reported more students handicapped, with the east, the west, and the midwest following in that order.

Information on Errors in the Data

A. Estimates of sampling error: Reporting precise statistical indicators for every categorical percentage in every norms group is impractical. There is further information available on the reliability of the data in appendix form. For random errors the standard error of a categorical percentage is a function of that percentage as well as the unweighted number of participants in the norms group. The standard error of the difference is approximately equal to the square root of the sum of the squared sampling errors. Stratification ensured some sampling in all sectors of higher education and provided a basis in the weighting procedures for disproportionate sampling of institutions. Nonrepresentativeness of samples within each stratification cell is a potential source of error, and while authors have taken precaution to minimize sources of systematic bias, the data are subject to some degree of constant and nonrandom variable errors.

B. Other errors: N/A.

Issues for Further Research

Self-definition is limiting. No categories were available for multiple handicaps. There was no space to define "other," the third most frequently cited handicap.

2. An Investigation of Maternal Rubella Students in a Postsecondary Program for the Deaf: Looking Ahead to the 1980s

Definition of Handicap

Deaf, multiple handicapped.

Universe, Type of Data

1,551 students enrolled at a postsecondary institution associated with Rochester Institute of Technology, National Technical Institute for the Deaf (NTID). Rubella students were 7.2 percent of total (112). Among cases in which the cause of deafness had been established, rubella students comprised 13.9 percent of the population.

Data Collection Methodology

Data were derived from a review of admissions information including the Differential Aptitude Tests and the NTID communication profile, which was gathered during orientation and the first weeks of classes.

Information on Errors in the Data

A. Estimates of sampling error: No estimates of sampling error, since the study was limited to one institute for the deaf.

B. Other errors: There are three areas of potential error.

1) Because only the population of NTID was used, generalization is risky.
2) No comparisons were made between the academic performance of rubella and nonrubella students.
3) No mention was made of additional handicaps among rubella and nonrubella students.

Issues for Further Research

A comparison of this population with Gallaudet's, for example, would help gauge the similarity of characteristics and further verify the percentage of rubella students among the total postsecondary population as 8 percent.

Informal feedback from around the country indicates that a considerable number of rubella pupils are experiencing inordinate learning difficulties at the late elementary and early secondary levels. These pupils and other rubella students classified under other multiple handicaps have not been studied.

3. One-in-Eleven Handicapped Adults in America

Definition of Handicap

Self-defined. Handicaps that interfered with working at jobs, or disabilities that lasted more than six months.

Universe, Type of Data

Members of the handicapped population who were: (1) between the ages of 16 and 64, (2) civilian, and (3) not living in institutions, whether hospitals or college dormitories. This group comprised 11,265,000 of the total 1970 U.S. population. Poverty thresholds, for all except farm households, were defined on a national basis only.

Data Collection Methodology

Questionnaires were distributed to a 15-percent sample and to a 5-percent sample. Some data items appeared on both questionnaires, thus amounting to a 20-percent sampling. Data on the

handicapped came only from the 5-percent sample; data on the general population came from the 20-percent sample.

Findings

Employment. Forty-two percent handicapped are employed compared with 59 percent total population.

Education. Fourteen percent more handicapped than nonhandicapped did not get beyond eighth grade. Seven percent more handicapped than nonhandicapped did not get beyond high school.

Income. Six percent more handicapped than nonhandicapped did not exceed earnings of $2,000 yearly. Seven percent fewer handicapped than nonhandicapped had earnings that exceeded $7,000 yearly.

Poverty. Poverty-level proportion of handicapped is almost twice as high as proportion in general population (15 percent handicapped vs. 8 percent general population).

Age. Two-thirds total population between 16 and 64 were less than 45 years of age. Two-thirds handicapped population between the ages of 16 and 64 are 45 years and older.

Information on Errors in the Data

A. Estimates of sampling error:
1) Sampled 5 percent population to obtain data on handicapped people.
2) Definition self-addressed and also defined as disabled six months or more.
3) No breakdown of handicap.
4) Sampling error not reported, found in other sources.

B. Other errors: N/A.

Issues for Further Research

Can improved opportunities allow handicapped people to break out of their traditional "less-than-average pattern"?

4. The 1964-1965 Rubella Epidemic and Its Implications for Postsecondary Education and Rehabilitation Services to Young Deaf Adults in the 1980s.

Definition of Handicap

Hearing impaired (8,000 of 20,000 to 30,000 born from 1963 to 1965.) Other multiple handicaps: neurological defects, cardiac defects, visual defects, mental retardation, and emotional and behavioral disorders.

Universe, Type of Data

An estimated 8,000 children born with congential rubella and requiring some degree of special education. Various researchers looked at sections of this universe:

Office of Demographic Studies, Gallaudet College (N = 43,946, with rubella = 7,739);
California School for the Deaf at Riverside (N = 1,468);
Lexington School for the Deaf (N = 16);
Clarke School for the Deaf (N = 16);
Wisconsin School for the Deaf (N = 30 rubella students, 30 control);
National Technical Institute for the Deaf (N = 302);
Developmental study testing children for physical defects and assessing psychological and psychiatric disorders at ages two-and-a-half to four years with follow-up at ages eight and nine years (follow-up continuing) (N = 243).

Data Collection Methodology

A review of the literature on postrubella students. Medical diagnostic, intelligence testing, and psychological and psychiatric assessment instruments were used. Length of studies varied according to type; only one was longitudinal, with parents and teachers interviewed for their opinions on the educational potential of the postrubella students.

Findings

Projected increase of 150 percent or more among students born in 1964 and 60 percent or more among students born in 1965 over previous and later annual entering enrollments. From 38 to 54 percent of the rubella students have added handicaps, which reduces projected enrollment by up to 50 percent. Most reasonable enrollment estimates are in the range of 75 to 150 percent increases. See also Sections VI and VII. Data are of limited use for projections by postsecondary education planners.

Information on Errors in the Data

A. Estimates of sampling error: N/A.

B. Other errors: Limited to students in special programs for the hearing impaired.

Issues for Further Research

No figures are available on those students whose primary handicap is not hearing impairment.

Examination of the enrollment figures for postsecondary institutions in the years 1977 through 1979 would reveal information about the children of the 1958 and 1959 rubella epidemic.

One cannot simply project postsecondary retention rates for rubella students on the basis of whether they completed secondary school, since many of these young people transfer from school to school, or drop out of school altogether.

A comparison needs to be made between the postrubella children enrolled in special programs designed to bring them into the mainstream of society and children enrolled in schools for the deaf and hearing-impaired. Are their needs similar?

Needs of young people with rubella-caused handicaps will be temporary, since the disease is both cyclical and epidemic.

The wide range of additional handicaps in this population makes it difficult to generalize. Also, due to a substantial incidence of educationally significant handicaps, this population may more appropriately need rehabilitation services rather than postsecondary education.

There are no clear profiles of academic progress for this population.

What factors are involved in the postrubella students' decision to continue their education on the postsecondary level? How do those factors differ, if at all, from those students whose handicap(s) resulted from other causes?

5. The Physically Impaired Population of the United States

Definition of handicap

Impairment was defined as a chronic or permanent defect resulting from disease, injury, or congenital malfunction.

Disability was defined as a functional limitation in an activity as a result of an impairment. For the purposes of the study, each individual was asked to rate his own disability and handicap in terms of its effects on his or her life and activities.

Universe, Type of Data

Noninstitutionalized handicapped persons, numbering 213,638,535.

Figures were derived from the 1976 statistics provided by the National Center for Health Statistics.

Data Collection Methodology

Population was broken down by type of disability, including vision, hearing, speech, paralysis, absence of major or minor extremity, and four categories of orthopedic disabilities. General methodology took prevalence rates for each of 12 impairment categories by sex and applied these to the male and female population of each state.

Findings

42.6 million (19.9 percent of the noninstitutionalized population) have one or more impairments. Of these, 30 percent have an impairment considered to constitute a disability. Projected figures for 1976 were 63 million impairments.

1976 12.8 million (6 percent of the population):

Vision Impairment	10,693,300
Hearing	15,957,800
Speech	1,969,810
Paralysis	1,523,270
Absence Extremities	2,124,455
Orthopedic	8,954,340 (4 subcategories)

Institutionalized population: 2,242,886 of the institutionalized population, or 44 percent, are in nursing homes for the aged.

Information on Errors in the Data

A. Estimates of sampling error:
1) Many of the figures have large sampling errors.
2) Some data were imputed or extrapolated from NCHS data, which have sampling error greater than 30 percent.
3) Data on multiple impairments are the least reliable, and errors are not estimated.
B. Other errors: Report summarizes data.

Issues for Further Research

Premise that age is major contributor to increasing numbers of impairments does not account for other causes of impairments. Extrapolating data in this fashion always increases the risk of taking something out of context.

If this report were being written for the professional statistician, the liberties taken with these numbers might not be acceptable. However, as this report is intended as a tool for managers and decision makers, minor technical questions and a certain degree of inaccuracy in the figures is an acceptable trade-off for improved utility.

6. Impairments Due to Injury—United States-1971

Definition of Handicap

Impairment was defined as chronic or permanent defect, disabling or not, representing for the most part decrease or loss of ability to perform certain functions, particularly functions of the musculoskeletal system and special senses.

Universe, Type of Data

A group of 134,000 persons, who were:
1) civilian, and
2) noninstitutionalized, from 42,000 households.

Figures were derived from 1971 statistics provided by the U.S. Bureau of the Census on a nationwide sample.

1. Type of impairment:
   a) visual
   b) hearing
   c) paralysis
   d) absence of fingers or toes
   e) back or spine
   f) upper extremity
   g) lower extremity
   h) multiple
   i) other

2. Age:
   under 45
   45 to 64
   65 and over

3. Family income:
   less than $5,000
   5,000 - 9,999
   10,000 - 14,999
   15,000+

4. Education of head of household:
   less than 9 years
   9 to 11 years
   12 years
   13 or more years

5. Current employment status:
   employed
   unemployed
   not in labor force

Data Collection Methodology

Interview format was used. Multistage probability design permitted continuous sampling over time. Tabulation can be provided for each of four geographic regions and urban and rural sections. Ratio-estimation process was used to make the sample more closely representative of the civilian, noninstitutionalized population. Data were adjusted for lack of response.

Information on Errors in the Data

A. Estimates of sampling error: Several different estimates of sampling error are provided. An asterisk indicates a cell with more than a 30 percent standard error.
B. Other errors:
(1) Gross differentiation in age renders this data difficult to apply directly for projection.
(2) Education background given for heads of households.
(3) Impairment due only to accidents.

7. Prevalence of Selected Impairments—United States-1971

Definition of Handicap

Impairment was defined as a chronic or permanent defect usually static in nature, resulting from disease, injury, or congenital malformation. This defect represents a decrease or loss of ability to perform various functions, particularly functions of the musculoskeletal system and sense organs. The *prevalence of a handicapped condition* was based on the estimated number of conditions of a specified type existing at a specified time, or the average number existing during a specified interval of time.

Universe, Type of Data

A group of 134,000 persons, who were:
(1) civilian, and
(2) noninstitutionalized, in 1971.

Figures were derived from 1971 statistics provided by the National Center for Health Statistics (NCHS) survey of a nationwide sample of households.

Categories included:

1. Sex
2. Color:
   white
   all others
3. Income:
   less than $3,000
   3,000 - 4,999
   5,000 - 6,999
   7,000 - 9,999
   10,000 - 14,999
   15,000 and more
4. Education of head of family:
   less than 9 years
   9 to 11 years
   12 years
   13 or more years
5. Activity status:
   usually working
   usually keeping house
   retired
6. Causing limitation of activity:
   unable to carry on major activity
   limited in amount of activity
7. Place of residence:
   all Standard Metropolitan Statistical Areas (SMSAs)
   central city
   not central city
   outside SMSA
   nonfarm
   farm
8. Geographic region:
   northeast
   north central
   south
   west
9. Type of impairment:
   visual
   hearing
   speech
   paralysis
   absence of extremities
   orthopedic

Data Collection Methodology

A multistage probability design, permitting continuous sampling additive overtime, was used.

Information on Errors in the Data

A. Estimates of sampling error: See section 6 of these profiles.
B. Other errors: See section 6 of these profiles.

Issues for Further Research

Exclusion of institutionalized population affects estimated prevalences. Similarly, so does exclusion of the Armed Forces population, especially as it relates to the G.I. Bill and other such veteran's benefits affecting the potential postsecondary population.

8. Statistics of Public Elementary and Secondary Day Schools

Definition of Handicap

Handicap was defined ostensively to include such disabilities as educable mental retardation, trainable mental retardation, hard-of-hearing, deafness, speech impairment, visual impairment, serious emotional disturbance, learning disability, and other health-related handicaps. This study relied on the diagnosis of school officials who place pupils in special education programs for the handicapped.

Universe, Type of Data

Handicapped children in public and elementary day schools in each state, the District of Columbia, as well as American Samoa, the Canal Zone, Puerto Rico, the Virgin Islands, and the Department of Defense overseas schools.

Figures were derived from survey data (see attached tables) collected by the states and reviewed by the National Center for Education Statistics for internal consistency.

Data Collection Methodology

A questionnaire, requesting reports on handicapped pupils served by special education programs for handicapped children, was sent to schools in the fall of 1977.

Findings

School-age population as of October 1, 1977 was 48,758,000. Membership was 43.7 million. Of this, 1.8 percent were special education pupils, a percentage rate which was also reported in Fall 1975 and 1976. The recorded number of students in elementary and secondary special education was 805,786. Special education schools for the handicapped which included only those schools that serve emotionally disturbed and mentally or physically handicapped pupils exclusively made 1.7 percent of the total number of schools (1,524).

Information on Errors in the Data

A. Estimate of sampling error: N/A.
B. Other errors:
(1) Mail questionnaire format can cause variation in interpretation of instructions and definitions.
(2) A nationwide statistical total reflects composite of different states' reporting practices although standardized forms and definitions have attempted to minimize these variations. Any deviations are footnoted in the tables.

Issues for Further Research

These data do not reflect those children who have not been diagnosed as handicapped or who are diagnosed and unable to obtain special services.

9. Identification of Handicapped Students, Using Data from Teachers, Parents, and Tests

Definition of handicap

Handicap was defined ostensively to include hearing impairment, vision problems, orthopedic handicaps, mental retardation, emotional disturbance, speech impairments and slow-learner problems. This study relied on parents, teachers, and medical and psychological tests to establish the presence of handicaps.

Universe, Type of Data

A sample of 6,768 adolescents between the ages of twelve and seventeen.

Figures were derived from data collect by the National Center for Health Statistics.

Data Collection Methodology

Data were collected from three sources: (1) Teachers using a school questionnaire to assess all facets of the students' behavior and personality; (2) Parents using a household questionnaire to obtain demographic and socioeconomic status data, as well as

other questionnaires designed to elicit information on the child's medical history and current health status as well as parental assessment of the youth's behavior and interpersonal relations at home; and (3) Standardized physical examination by a physician.

Information on Errors in the Data

A. Estimates of sampling error: Standard errors were generated using a method developed for complex multistage sample surveys, called first-order Taylor approximation of the deviation of estimates from their expected values. Sampling error is excluded in most of the tables.

B. Other errors: N/A, since the study does not claim to establish the prevalence of handicapping conditions.

Issues for Further Research

A. The findings, particularly when compared with those of the six-to-eleven-year-old population, strongly suggest the need for continued efforts to clarify criteria and guidelines for eligibility. Such classifications can lead to better identification practices and provide more accurate counts of handicapped students for purposes of allocating federal dollars and for comparing the eligible population across states.

B. The findings point to the need for further understanding of the longitudinal changes that occur across particular handicapping conditions and that may account for the dramatic decline in potential need from childhood to adolescence.

C. The findings underscore the importance of the federal requirement for multiple assessment of children prior to placement in special education programs. Single indicators of need for special education services—whether teacher, parent, or test assessments—should be highly suspect.

10. Validation of State Counts of Handicapped Children: Vol. II, Estimation of the Number of Handicapped Children in Each State

Definition of Handicap

Handicapped children are defined in P.L. 94-142 and the *Federal Register*. Children are counted and classified by their handicap, so that until children are diagnosed, they are not counted.

Universe, Type of Data

A. The study reviews 39 data sources, including Bureau of Education for the Handicapped (BEH), Office of Civil Rights (OCR) in the Department of Education, National Institute of Mental Health, National Center for Health Statistics, Bureau of the Census, and several individual state studies.

B. Children ages three to twenty-one were classified by state, age, race, and socioeconomic status.

C. The study estimates the prevalence of various types of handicaps.

Data Collection Methodology

Literature search, review of previous prevalence estimates. Methodology was stratification of population by selected demographic characteristics. Alternative prevalence rates within each stratum were developed from each disability and projections made of population size within each stratum per state. These rates were then applied to projected population sizes to derive prevalence estimates by stratum, state, and handicapping condition. Estimates summed across stratum to project prevalence of each disability.

Information on Errors in the Data

A. Estimates of sampling error: Assessment of accuracy is not possible.

B. Other errors: Source limitations include timeliness of data, and population covered (i.e., only public school children). Categorization scheme and definitions vary considerably across sources and assessment of accuracy does not exist in some sources. The intention of the study was to provide a range of plausible values for use in detecting gross discrepancies not to derive a single set of extremely accurate estimates.

Issues for Further Research

Extensive research still needs to be done on the factors affecting the size of the population of children in need of special education.

11. Progress Toward Free, Appropriate Public Education: A Report to Congress on the Implementation of PL 94-142: The Education for All Handicapped Children Act

Definition of Handicap

Handicapped children were defined as those children who are evaluated in accordance with procedures specified in the regulations under PL 94-142 and, who as a result, are found to be mentally retarded, hard-of-hearing, deaf, speech-impaired, visually handicapped, seriously emotionally handicapped, orthopedically impaired, deaf-blind, multihandicapped, other health-impaired or specific learning disability, and are in need of special education or related services.

Universe, Type of Data

Data represent average figures from two state counts of handicapped children: one on October 1 and another on February 1 of prior school year. School-age population refers to the number of children age 5 to 17 years (Source: U.S. Department of Commerce, Bureau of the Census, *Population Estimates and Projections*, Series P-25, No. 646, 1977).

Data Collection Methodology

Different evaluation and monitoring studies conducted by/and for Bureau of Education for the Handicapped regarding implementation of PL 94-142. Includes state child count data and State Annual Program Plans.

Findings

For school year 1977-1978, approximately 3.6 million children received special education and related services. Children counted under separate act amounted to 200,000, bringing total count of children served to 3.8 million. These children fall into three predominant categories: speech impaired, learning disabled, and mentally retarded. Following these are emotionally disturbed, other health impaired, orthopedically impaired, deaf, hard of hearing, and visually handicapped.

Information on Errors in the Data

A. Estimates of sampling error: N/A, since data are reported only for the universe.

B. Other errors: There is considerable variation by state in percent of children served and also for particular handicapping conditions. This may be due to state variations in definitions and eligibility criteria, differences in identification and assessment procedures, and other factors. For these reasons, estimates may be short by 1.3 million and prevalence estimates vary from 4.0 to 10.2 million.

Issues for Further Research

The data deal only with children identified as handicapped (see definition of handicapped). For NACUBO's purposes these data are limited. They deal with handicapped children currently in school and who can chart their paths through secondary school

but are not helpful in projecting the likelihood of these children attending a postsecondary institution. The wide disparity between estimates and actual counts, and the difficulty in ascertaining the accuracy of the counts, lessens the data's usefulness.

BEH offers several suggestions and points out the shortcomings of various data sources.

12. Digest of Data on Persons with Disabilities

Definition of Handicap

Handicaps and disabilities were defined in both diagnostic and functional terms. *Diagnostic:* anatomical and pathologic. *Functional:* the effect of an impairment on a person's ability to perform one or more life activities. Three schemes were used to classify handicaps: (1) medical and psychiatric, (2) limitation of activity, and (3) disability.

Universe, Type of Data

Seventy-five different data sources were gathered by census or by sample. Virtually all data were based on self-reported characteristics.

Data Collection Methodology

Summarized existing data.

Information on Errors in the Data

A. Estimates of sampling error: Sampling error, estimates derived from small samples are less reliable than estimates based on large samples. Detailed discussion available for each table presented.

B. Other errors: (1) Statistical summaries can camouflage variations within a characterized group. (2) Average values convey no information about either range of distribution of characteristics. (3) Distribution of characteristics varies from region to region and state to state, especially for income, employment, education, and other socioeconomic variables, so that direct comparisons are not recommended. (4) Some data although they were the most current available at time of compilation, were as much as nine years old.

Issues for Further Research

More information on mental health catagories, as well as a consensus on definitions, is needed.

The status of people younger than 17 has not yet been explored. The social situation of handicapped persons is an important factor in determining service need. Highly individualized variables such as motivation, education and training, and the availability of support services will influence a person's decision to live as independently as possible. Information concerning such subjective variables is bound to be somewhat inaccurate because of the difficulty of constructing an appropriate survey instrument and inaccuracies in reporting responses. This study has collected limited information in relatively simple categories to meet the needs of an audience with diverse concerns and objectives.

13. 1974 Follow-up of Disabled and Nondisabled Adults: No. 1, General Characteristics

Definition of Handicap

Disability was defined as a limitation in the kind or amount of work (or housework) resulting from a chronic health condition or impairment lasting three months or longer. Classification was based on extent of individual's capacity for work.

Universe, Type of Data

18,000 persons—11,700 were disabled (1972 survey); 16,030 persons—7,600 were disabled (1974 survey):

1. Categories:
   area and size of community
   rural area, farm and nonfarm
   urban up to 100,000
   cities, more than 100,000
   suburb
2. Race:
   white
   black and others
3. Degree of disability:
   severe
   partial
4. Sex
5. Age:
   22 to 34
   35 to 44
   45 to 54
   55 to 64
6. Marital status:
   married
   widowed
   divorced or separated
   never married
7. Education:
   less than 8 years
   8 years
   some high school
   4 years of high school
   college
   not reported
8. Geographic location:
   northeast
   north central
   south
   west
   not reported
9. Disabling condition:
   musculoskeletal
   cardiovascular
   respiratory
   digestive
   mental
   all other
10. Number of disabling conditions:
    1, 2, 3, 4, or more
11. Activity limitation:
    none
    walking
    using stairs
    standing for long periods
    sitting for long periods
    stooping
    lifting weight less than 10 pounds
    lifting weight more than 10 pounds
    reaching
    grasping or handling objects
12. Mobility limitations:
    none
    some
13. Functional limitations:
    no loss, or minor loss
    moderate to moderate/severe loss
    severe loss
    functionally dependent
    not reported

14. Personal care need:
    needs help
    usually or frequently needs help
    occasionally needs help
15. Cause of condition:
    not caused by accident
    caused by accident: at job, at home, other
16. Number of minor children in household

Data Collection Methodology

Five percent sample from 1970 census using stratified, multistage cluster design with follow-up interviews. Design comprised of 557 sampling areas that included every county and some independent cities in the U.S. Sample designed to represent the reinstitutionalized civilian population of U.S. aged eighteen to sixty-four as of April 1970. Collected by Bureau of the Census.

Findings

2.8 million persons (3.4 percent 1972 noninstitutionalized, nondisabled adult population) became disabled from Janaury 1972 to December 1973. Persons who were severely disabled numbered 1,469,000; Median age of disabled-49; women comprised 56 percent of disabled population; Black women are overrepresented in the disabled population. Geographically, incidence of recent disability is highest in the South and disproportionately high among rural residents. Musculoskeletal and cardiovascular disorders are the most common primary impairments of men and women. Most conditions and limitations were of nontraumatic origin. This study includes information on family and work characteristics, such as work adjustment to disability and occupation, duration of employment, family income, and social security status.

Information on Errors in the Data

A. Estimates of sampling error: Standard error table provided.
B. Other errors: Missing information was imputed.

Issues for Further Research

The study does not deal with institutionalized population.

More research necessary on the disproportionate representation of Blacks in the handicapped population.

14. Impact of Section 504 of the Rehabilitation Act of 1973 on Colleges and Universities

Definition of Handicap

Mobility impaired: Any person who must use a standard manual or electric wheelchair or other assistive device to move from place to place, or any person who otherwise finds stairs and other similar physical features impediments to movement.

Visually impaired: Any person who has a visual impairment, when correction necessitates some further accommodation, regardless of whether the accommodation is provided by the institution, an outside source, or the person.

Acoustically impaired: Any person who has a hearing impairment which, even with correction, is of sufficient severity to necessitate some accommodation, either by the institution, an outside source, or the person, in order for him or her to understand oral information. The term "acoustically impaired" applies to both deaf and hard-of-hearing persons.

Universe, Type of Data

Seven hundred colleges and universities (chosen at random) throughout the U.S.

Data Collection Methodology

Two-stage approach: (1) modified version of survey instrument: facilities inventory and classification manual (1973) incorporating information on accessibility and renovation costs associated with section 504, administered through a network of state agencies to a stratified random sample. (2) on-site audits of approximately 20 percent (138) of the original 700 institutions. Information supplied included all physical obstacles that limited program accessibility as well as detailed description of methods planned to insure accessibility and cost-projection site visits to validate cost estimates conducted by two-member teams for a period of three or fewer days. Teams (1) administered four forms gathering information on facility, service, and program accessibility; (2) carried out actual inspections of buildings inventoried on the forms measuring ramps inclines, door openings, etc.; and (3) conducted exit interviews to discuss findings.

Information on Errors in the Data

A. Estimates of sampling error: N/A.
B. Other errors:
1) Categories of handicapped individual restricted to mobility impaired.
2) Costs for auxiliary aide and services required by Section 504 excluded.
3) Definition of facility accessibility restricted to building accessibility.
4) All costs incurred prior to September 15, 1978 excluded from study.

15. Work Disability in the U.S.: A Chartbook

Definition of Handicap

Disability was defined as any limitation in kind or amount of work (or housework) resulting from a chronic health condition or impairment lasting three or more months.

A *totally disabled* person is one who cannot work at all or regularly.

A *partially and occupationally disabled* person is one who can work regularly, but cannot do the same work as before the disabling condition.

A person who is *partially disabled with secondary work limitations* is one who can work full-time regularly and at same work, but has limitations in kind or amount of work.

Universe, Type of Data

Fifteen million persons who are limited in their ability to work, of whom 18,000 persons were interviewed.

Data Collection Methodology

National survey with data collected in personal interviews from June to September 1972.

Information on Errors in the Data

A. Estimates of sampling error: N/A, since data are reported only for the sample.
B. Other errors: No information available.

16. Survey of Income and Education (Unpublished Data) Disability Statistics

Definition of Handicap

Work disability was defined as a long-term health condition (physical, mental, or emotional) that limits the kind or amount of work a person can do. Disabilities include mental retardation,

hard-of-hearing, deafness, speech impairment, serious difficulty in seeing (or blindness), serious emotional disturbance, orthopedic handicap, arthritis or rheumatism, trouble with back or spine, any heart trouble, chronic nervous disorder, respiratory disorder, digestive disorder.

Universe, Type of Data

158,500 eligible households selected independently in all states and the District of Columbia. The total number of households interviewed was 151,170. Persons in institutions or such group quarters as dormitories or military barracks not included in sample.

Data Collection Methodology

Sample design was stratified in a multistage cluster design. Each state was divided into areas made up of countries and cities, referred to as primary sampling units (PSUs), which were grouped to form strata within each state according to proportion of persons who were children five through seventeen years of age living in poverty families at time of 1970 census. Within selected PSUs, a sample of housing units was selected. Also selected were a sample of new construction building permits for houses constructed since 1970 census in areas under jurisdiction of building permit offices and a sample not under this jurisdiction. Data were based on personal interview surveys with items 60-70B pertaining to work disability information.

Information on Errors in the Data

A. Estimates of sampling error: The data are subject to errors of response and nonreporting, as well as errors due to sampling variability. Because few people reported disabilities, the standard errors associated with the state estimates are relatively large.

B. Other errors: An individual's response to a survey question on work disability is necessarily subjective. The phrase "limited in the kind or amount of work he/she can do" is open to a wide range of interpretations and even the concept of a complete work disability is not unambiguous. Thus, care should be exercised in the interpretation of differences between the disabled and non-disabled populations. It should be pointed out that steps used in the estimation procedure to reduce errors due to nonresponse and coverage deficiencies introduce nonsampling errors of their own.

Issues for Further Research

The study emphasizes work disability, a specific definition for specific purposes. Disability is also self-defined.

Section III: Comparative Data on Expenditures for Facilities Modification And Programs and Services for Handicapped Students

This portion of the HEATH III report summarizes the responses of 298 colleges and universities to a questionnaire seeking information on the funding of facilities, programs, and services for handicapped students for the academic years 1976-77 through 1980-81. The questionnaire, "Institutional Packaging of Funding for the Handicapped Under Section 504," was distributed to 944 NACUBO-member institutions of all types and sizes across the country. The questionnaire was designed to elicit information on the amount and sources of funds for modification of facilities, and programs and services for handicapped students. Information was also collected on the number and type of handicapped students enrolled and the number of staff employed to provide services to handicapped students. A copy of the questionnaire is included in appendix A of this section.

Information gathered by the questionnaire is intended to serve three purposes: (1) to provide useful additions to the extremely limited store of general information on handicapped college students; (2) to facilitate, with the site-visit section (section I), the planning and coordination of activities for the handicapped; and (3) to provide a foundation for further, more rigorous efforts to acquire and analyze information on the handicapped student population and on the strengths and weaknesses of current efforts by government and institutions to insure equal educational opportunity for that population.

Results from the questionnaire should *not* be used as the basis for detailed inferences regarding the current state of handicapped students in higher education. First, while the student population of responding institutions is relatively large, it is probably not representative (only about two-thirds of all higher education institutions are NACUBO members). Second, only a small percentage of questionnaire recipients responded, allowing the introduction of unpredictable biases associated with the ability and/or willingness of an institution to complete the questionnaire. Third, even complete and usable responses provided from the colleges are based on estimates and educated guesses.

Information from the questionnaire nevertheless provides broad indications of trends in and size and makeup of the handicapped student population, a picture of institutional funding strategies, and some hypotheses that may be used as the foundation for more rigorous statistical studies. Results also highlight the fact that most institutions have only recently established recordkeeping and information management for expenditures for handicapped students. Before 1974, almost no information was available on institutional expenditures to promote accessibility. Only an increase in both internal and external funds has prompted institutions to track these expenditures. This study documents the need for continued improvement of these procedures.

Recipients of the questionnaire were chosen randomly from NACUBO members. They were divided into groups according to size (small, medium, and large), type (2-year and 4-year), and governance (public and independent). A detailed breakdown of these groups and the response rates within each group are presented in the following table.

The table shows that response rates varied widely among the 10 groups. Because few independent 2-year schools responded, those that did were distributed among independent institutions according to size. Public 2-year colleges with enrollments of 2,500 to 10,000 and less than 2,500 were combined into a single group.

The most useful information from NACUBO's analysis of questionnaire responses has been organized in this section in table format for each of the eight groups for the period 1976-81.* The following categories are covered:

- Total enrollment per institution
- Enrollment of handicapped students per institution

*Respondents' figures are projected for 1980-81.

Questionnaire Recipients

Group	Governance	Type	Size	National Population(a)	Sample Population(b)	Gross Population(c)
1	State	4-yr.	over 10,000	170	150	150
2	State	4-yr.	2,500-10,000	249	181	119
3	State	4-yr.	under 2,500	192	76	60
4	State	2-yr.	over 10,000	94	36(44)(d)	36(44)(d)
5	State(e)	2-yr.	2,500-10,000	323	141	83
6	State(e)	2-yr.	under 2,500	488	194	80
7	Independent	4-yr.	under 2,500	928	680	224
8	Independent	4-yr.	2,500-10,000	182	153	101
9	Independent	4-yr.	over 10,000	32	32	31
10	Independent	2-yr.	all sizes	231	90	60
TOTAL				2,889	1,733	944

Notes:
a) All institutions in this column listed in the 1976 revised edition of the Carnegie Council's "Classification of Institutions of Higher Education."
b) All NACUBO members in this group.
c) The number of questionnaires sent to institutions in this group.
d) Questionnaires were mailed to 36 institutions, some of which are systems. "(44)" is the total number of institutions covered by the mailing.
e) Groups 5 and 6 were combined into group 5 and group 10 was distributed in groups 7 and 8 because few responses were received.

- Percent of students identified as handicapped, by type of handicap (1979 only)**
- Expenditures for facilities modifications in dollars and as a percentage of total capital expenditures
- Expenditures for programs and services in dollars and as a percentage of total educational and general expenditures
- Expenditures for programs and services per handicapped student enrolled

The following information is not included in the tables:
- Number of staff employed to provide services for handicapped students (number per institution and number of handicapped students per staff person)
- Method used to identify prospective students
- Projection of dollars needed to make campuses accessible.***

Not all respondents to the questionnaire answered all questions. As a result, the number of responses varies within each summary, depending on the information being summarized. The number of usable responses (N) for each year is included in the tables.

Responses to questions on the questionnaire regarding identification methods and the effect on the institution of section 504 restrictions on preadmission inquiries are summarized in the conclusion of this section. These questions were included in the summary at the request of several associations who work with the handicapped. Although the questions do not deal directly with the financing of programs, services and facilities for handicapped students, the information is useful to administrators.

Cost per student has not been calculated, as costs for handicapped students vary greatly. For example, costs for mobility-impaired students differ from those for the blind or deaf, and costs for one blind student may differ greatly from the cost for another blind student. It was also decided to exclude responses indicating zero expenditures, as zero tends to distort the average.

Finally, it is necessary to point out that many institutions have adopted an unbalanced approach to accessibility. "Facilities mentality" is the conviction within an institution that it must expend funds on facilities; however, a more balanced approach may be possible, such as reassigning classrooms to provide services for handicapped students.

NACUBO's "Guide to the Section 504 Self-Evaluation for Colleges and Universities" states that *program accessibility* is the goal. Structural changes are required *only* when no other feasible way exists to make a program or activity accessible.

Group 1: Public 4-Year Institutions
Enrollment: 10,000+
Number of responses: 72

These institutions comprise the largest sample group, in actual number of questionnaires returned and students enrolled. (A questionnaire was sent to land-grant institutions of this enrollment size in each state.) The total fall enrollment (full-time enrollment—FTE) for the 4 years is shown in table 1a.

**"Type of handicap" is listed on the questionnaire as mobility impaired, visually impaired, hearing impaired, learning disabled, and other. Methods used by institutions to identify handicapped students include: (1) voluntary statement on admission form, (2) referrals from state rehabilitation agencies, and (3) voluntary statement at registration.

***Respondents were asked to estimate total additional expenditures (after FY80-81) to achieve 504 compliance.

Table 1a: Total Fall Enrollment (FTE)

Year	N	Total	Avg./Institution
1976	72	1,585,436	22,020
1977	72	1,601,477	22,243
1978	72	1,601,720	22,246
1979	71	1,628,185	22,932

Enrollment for 1979-80 equaled 52 percent of the enrollment of those institutions that responded, and 14 percent of enrollment at all institutions in fall 1979.*

As enrollment has increased, the number of students identified as handicapped rose sharply and then leveled off. In 1976, 44 of the 72 respondents knew the number of handicapped, this figure grew to 67 in four years.

Table 1b shows the percentage of students identified by institutions as handicapped and the impairments for those students in 1979.

Table 1b: Percentage of Students Identified as Handicapped

1976	N	1977	N	1978	N	1979	N
.77%	44	.76%	55	.94%	62	.88%	67

Type of Handicap (1979)

	Total	Avg./Institution	N
Mobility	5,271	80	66
Hearing	701	11	63
Vision	1,443	22	66
Learning Disability	300	9	35
Other	3,640	67	54

N = number of institutions responding

In 1979, the average number of students per institution identified as handicapped was 189.

Table 1c: Percentage of Total Budget

Year	Facilities Dollars/ Capital Budget Avg./Institution	N	Program & Service Dollars/E&G Budget Avg./Institution	N
1976-77	5.3%	35	.04%	34
1977-78	6.7%	43	.05%	40
1978-79	7.9%	52	.06%	47
1979-80	8.2%	43	.08%	42
1980-81*	18.9%	19	.05%	18

*projected

Percentages have been given to show the difference between expenditures for facilities and those for programs. Although the two budgets are markedly different, it is necessary to know what percentage these budgets are of the Capital and Educational and General budgets.

Table 1d shows an emphasis on expenditures in the facilities budget. In both facilities and programs and services (P&S), the average number of dollars per institution has nearly doubled, with the expectation of even higher budgets for 1980-81. This comes at a time when budget cutting by state legislatures is the norm.

*Charles J. Andersen, ed., *1980 Fact Book for Academic Administrators*, Washington, D.C., American Council on Education, 1980, Chart 59.

Table 1d: Expenditures for Handicapped Students by Year

Year	Facilities (000) N	Total	Avg.	Programs (000) N	Total	Avg.
1976-77	37	$ 4,037	$109	36	$1,744	$ 48
1977-78	45	3,209	71	41	2,303	56
1978-79	54	7,136	132	48	3,741	78
1979-80	59	12,203	207	53	4,192	79
1980-81*	37	16,026	433	28	2,967	106

*projected

The amount being spent per handicapped student is shown in Table 1e.

Table 1e: Program and Service Expenditures for Handicapped Students

Year	N	Avg./Institution	Total
1976-77	30	$330	$ 9,901
1977-78	37	434	16,066
1978-79	44	472	20,775
1979-80	51	435	22,193

From 1977 to 1979 dollars spent have remained constant, which means that in real dollars the amount spent has decreased. Even though the number of institutions that account for these dollars has increased, it is very likely that the dollars are probably understated.

All 72 institutions in this group fund a staff position to coordinate or provide services for the handicapped. For the 65 schools responding, the average number of students per staff is 170. Staff time devoted to the handicapped (N=69) is 3.4 FTE.

Dollars spent for facilities since 1976 total $27,820,599 (36 institutions), and for programs and services $9,856,340 (29 institutions). The combined total is $37,676,939. The 48 institutions need more than $77 million to make the physical plant accessible. These amounts differ from those in Table 1e because different respondents were included.

All but one respondent (N=71) indicated use of identification methods made necessary by restrictions found in section 504. Table 10i lists the methods used.

Group 2: Public 4-Year Institutions
Enrollment: 2,500 to 10,000
Number of responses: 42

Enrollment since 1976-77 is shown in table 2a.

Table 2a: Total Fall Enrollment (FTE)

Year	N	Total	Avg./Institution
1976	42	241,782	5,757
1977	42	247,379	5,890
1978	42	250,790	5,971
1979	42	256,293	6,102

Table 2b shows the percentage of the student population identified as handicapped; the second part shows the average number of handicapped students at these institutions in 1979.

Table 2b: Percentage of Students Identified as Handicapped

1976	N	1977	N	1978	N	1979	N
.63%	18	.68%	23	.86%	31	.90%	34

Type of Handicap (1979)

	Total	Avg./Institution	N
Mobility	737	21	35
Hearing	133	5	27
Vision	223	7	31
Learning Disability	124	7	19
Other	682	36	19

N = number of institutions responding

Both overall enrollment and enrollment of handicapped students have increased steadily. The percentage of enrollment made up of handicapped students has grown at a faster rate (2.7 percent) than overall enrollment (1.1 percent).

The amount of dollars being spent on the handicapped is divided into funds for facilities and funds for programs and services. Table 2c shows the percentage of funds being expended from the institution's capital and E&G budgets.

Table 2c: Percentage of Total Budget

Year	Facilities Dollars/ Capital Budget Avg./Institution	N	Program & Service Dollars/E&G Budget Avg./Institution	N
1976-77	9%	6	.13%	7
1977-78	12%	10	.12%	10
1978-79	5%	17	.27%	16
1979-80	12%	22	.31%	15
1980-81*	20%	8	.43%	10

*projected

Table 2d compares the amount spent on facilities for the handicapped to that spent on programs and services for the handicapped.

Table 2d: Expenditures for Handicapped Students by Year

	Facilities (000)			Programs (000)		
Year	N	Total	Avg.	N	Total	Avg.
1976-77	8	$ 126	$ 16	7	$ 199	$28
1977-78	12	1,573	131	10	246	25
1978-79	18	1,171	65	16	417	26
1979-80	27	2,231	83	18	669	37
1980-81*	14	2,252	161	14	1,042	74

*projected

Other than the steady increase in total dollars, no consistent trend is apparent. The total for the five years is $4,015,725 (N = 17) for facilities and $2,090,201 (N = 11) for programs. These amounts differ from those in Table 2d because different respondents were included in this count.

Another way of looking at the money spent for these students is shown in table 2e.

Table 2e: Program and Service Expenditures for Handicapped Students

Year	N	Avg./Institution	Total
1976-77	5	$ 679	$ 3,393
1977-78	6	487	2,919
1978-79	11	493	5,413
1979-80	14	1,228	17,197

It is helpful to know where this money is being spent. Thirty-six schools have staff for handicapped students, with the average number of students per staff for the 26 responding schools being 172. The 32 schools with actual staff time for the handicapped, average 1.32 FTE.

Funds needed for the campus to comply with specifications of section 504 totals $25,860,000 for the 30 schools. Compared to the $4,015,725 already spent, these respondents have indicated that much work remains to be done.

Group 3: Public 4-Year Institutions
Enrollment: under 2,500
Number of responses: 21

Though the average enrollment for these institutions is somewhat larger than 2,500, they are mainly smaller 4-year public institutions.

Table 3a: Total Fall Enrollment (FTE)

Year	N	Total	Avg./Institution
1976	18	56,124	3,118
1977	19	58,278	3,067
1978	21	85,585	4,075
1979	21	85,699	4,081

The percentage of students identified as handicapped is shown in table 3b.

Table 3b: Percentage of Students Identified as Handicapped

1976	N	1977	N	1978	N	1979	N
.29%	8	.59%	11	.49%	11	.65%	15

Type of Handicap (1979)

	Total	Avg./Institution	N
Mobility	76	8	10
Hearing	13	3	5
Vision	30	3	9
Learning Disability	9	3	3
Other	133	44	3

N = number of institutions responding

As N doubled, the percentage of handicapped students at the institutions more than doubled. The largest groups of identifiable handicapped students are "mobility" and "other" (primarily medical).

Funds expended, as a percentage of total budgets, are shown in table 3c.

Table 3c: Percentage of Total Budget

Year	Facilities Dollars/ Capital Budget Avg./Institution	N	Program & Service Dollars/E&G Budget Avg./Institution	N
1976-77	2.2%	3	N/A	0
1977-78	0.7%	6	N/A	0
1978-79	5.3%	9	.02%	1
1979-80	2.8%	9	.09%	3
1980-81*	48.2%	3	.11%	1

*projected

Table 3d compares the amount spent on facilities for the handicapped to that spent for programs and services.

Table 3d: Expenditures for Handicapped Students by Year

Year	Facilities (000) N	Total	Avg.	Programs (000) N	Total	Avg.
1976-77	3	$ 14	$ 5	0	N/A	N/A
1977-78	6	47	8	0	N/A	N/A
1978-79	9	392	44	1	$ 0.9	$ 0.9
1979-80	9	268	30	3	29	10
1980-81*	5	562	112	1	24	24

*projected

Expenditures for facilities accessibility have increased annually. The total amount spent on facilities for the past 5 years was $1,227,144 (an average of $175,306 for the seven institutions).

Expenditures for programs and services for the 5 years totaled $52,400 (an average of $26,200 per institution (N=2)). These expenditures (per student for 5 years) are listed below in table 3e.

Table 3e: Program and Service Expenditures for Handicapped Students

Year	N	Avg./Institution	Total
1976-77	0	N/A	N/A
1977-78	0	N/A	N/A
1978-79	1	$ 87	$ 87
1979-80	3	222	666

The dollars above were spent to fund staff for handicapped students at 13 institutions. Average staff time devoted to these students was 1.07 FTE (N=11), and the student/staff ratio was 91:1 (N=9).

The total projected amount needed to meet requirements for accessibility for 15 institutions is $7,607,000.

Group 4: Public 2-Year Institutions
Enrollment: 10,000+
Number of responses: 17

Table 4a: Total Fall Enrollment (FTE)

Year	N	Total	Avg./Institution
1976	15	363,747	24,250
1977	16	395,217	24,701
1978	16	387,517	24,220
1979	16	405,669	25,354

The percentage of students identified as handicapped in this group is larger than in all other groups except medium-sized 2-year public colleges. Table 4b shows the steady rise in this percentage and the increased number of respondents.

Table 4b: Percentage of Students Identified as Handicapped

1976	N	1977	N	1978	N	1979	N
.63%	6	1.02%	10	1.12%	11	1.10%	13

Type of Handicap (1979)

	Total	Avg./Institution	N
Mobility	1,176	98	12
Hearing	285	22	13
Vision	248	21	12
Learning Disability	665	67	10
Other	1,377	115	12

N = number of institutions responding

The number of students who are learning disabled appears to be larger for this group than for others, perhaps because of the mission of these institutions.

Table 4c shows that the percentage of budget spent is not much different from what other types of institutions spend.

Table 4c: Percentage of Total Budget

Year	Facilities Dollars/ Capital Budget Avg./Institution	N	Program & Service Dollars/E&G Budget Avg./Institution	N
1976-77	4.26%	6	.35%	6
1977-78	4.89%	5	.38%	10
1978-79	1.18%	6	.46%	13
1979-80	3.24%	6	.54%	13
1980-81*	1.47%	5	.81%	4

*projected

The budget percentage spent on facilities has decreased, while the amount spent for programs and services has steadily increased. Interestingly, the number of respondents for P&S has increased. For seven schools, the total amount spent on P&S during the past five years is $778,661. Expenditures for facilities totaled $979,623 (N=9). This total is different from that in table 4d as it is only for those institutions that provided funding information for all five years.

Table 4d: Expenditures for Handicapped Students by Year

Year	Facilities (000) N	Total	Avg.	Programs (000) N	Total	Avg.
1976-77	6	$549	$92	6	$ 460	$ 77
1977-78	5	245	49	10	1,120	112
1978-79	8	183	23	13	1,924	148
1979-80	9	384	43	13	2,612	201
1980-81*	6	269	45	7	1,493	213

*projected

More funds are earmarked for P&S in these institutions than in others, although they constitute a smaller per-

centage of the budget. Because this is an important expenditure, especially for the students, it is helpful to see how these funds are spent.

Table 4e: Program and Service Expenditures for Handicapped Students

Year	N	Avg./Institution	Total
1976-77	5	$1,631	$ 8,155
1977-78	8	708	5,668
1978-79	10	1,044	10,442
1979-80	11	735	8,082

Sixteen institutions have staff who devote time to the needs of these students (average staff time is 5.2 FTE (N=15)). The average number of students per staff is 371 (N=13). Individual attention for handicapped students at these institutions may not be a priority.

The amount needed in this group to achieve compliance with section 504 is one of the lowest of any group, because many of these institutions were built after the issue of accessibility was raised. Nine institutions need a projected total of $935,000 to make their campuses accessible.

Note: All responses for groups 5 and 6 have been combined.

Group 5: Public 2-Year Institutions
Enrollment: Under 10,000
Number of responses: 35

This group has the largest percentage of students identified as handicapped. The average total enrollment at these institutions is moderate.

Table 5a: Total Fall Enrollment (FTE)

Year	N	Total	Avg./Institution
1976	34	220,268	6,479
1977	35	237,035	6,772
1978	35	242,545	6,930
1979	35	247,771	7,079

The increases are small, and growth is consistent from year to year. As enrollment has steadily grown, so has the number of handicapped students.

Table 5b: Percentage of Students Identified as Handicapped

1976	N	1977	N	1978	N	1979	N
1.46%	17	1.50%	20	1.49%	22	1.56%	28

Type of Handicap (1979)

	Total	Avg./Institution	N
Mobility	1,005	39	26
Hearing	418	18	23
Vision	303	15	20
Learning Disability	400	24	17
Other	1,250	69	18

N = number of institutions responding

The average number of learning-disabled students per institution is greater than that with hearing and vision impairments and less than that with mobility and other impairments. It appears that students in the "mobility" and "other" categories are more likely to attend public 2-year institutions.

Table 5c: Percentage of Total Budget

Year	Facilities Dollars/ Capital Budget Avg./Institution	N	Program & Service Dollars/E&G Budget Avg./Institution	N
1976-77	6.96%	6	.36%	10
1977-78	13.45%	11	.39%	13
1978-79	6.14%	14	.43%	14
1979-80	7.79%	18	7.30%	15
1980-81*	18.44%	6	.40%	6

*projected

Budget percentages allocated to facilities and P&S are comparable to budget percentages at other institutions that set aside funds for handicapped students. Fewer than half of the respondents were able to include the amount of dollars available (except for facilities in 1979-80).

Table 5d shows the total dollar amount spent and the average per institution. The total dollar amount, especially in programs and services, is small.

Table 5d: Expenditures for Handicapped Students by Year

Year	Facilities (000) N	Total	Avg.	Programs (000) N	Total	Avg.
1976-77	6	$ 133	$22	10	$ 351	$35
1977-78	11	1,069	97	13	647	50
1978-79	16	987	62	15	869	58
1979-80	20	529	26	16	1,544	97
1980-81*	9	246	27	12	458	38

*projected

Table 5e lists expenditures for programs and services for handicapped students.

Table 5e: Program and Service Expenditures for Handicapped Students

Year	N	Avg./Institution	Total
1976-77	6	$361	$2,165
1977-78	9	448	4,036
1978-79	12	428	5,136
1979-80	15	660	9,906

The total dollar amount and the figure per institution are generally growing.

Twenty-five institutions indicated that staff are available for handicapped students. Average staff time is 2.31 FTE (N=23), but the student/staff ratio is high (an average of 487:1 (N=20)).

Because these campuses are newer, the amount per student needed for campus accessibility is moderate. The total projected amount for compliance is $5,404,000 (N=21).

Note: Group 10 has been distributed in groups 7 and 8.
Group 7: Independent 2- and 4-Year Institutions
Enrollment: Under 2,500
Number of responses: 56

These institutions represent the second largest group of respondents. Because enrollments average below 2,000, total enrollment is small. Average enrollment has remained virtually unchanged over the past several years. These institutions generally have limited funds with many needs to meet.

Table 7a: Total Fall Enrollment (FTE)

Year	N	Total	Avg./Institution
1976	53	68,825	1,299
1977	53	69,851	1,318
1978	56	72,651	1,297
1979	55	73,678	1,340

The percentage of students identified as handicapped is not much smaller than at other institutions, although the actual number of students is. Because fewer funds are available at these institutions, and total enrollment is small, the impact of handicapped students may be greater here than at larger institutions.

Table 7b: Percentage of Students Identified as Handicapped

1976	N	1977	N	1978	N	1979	N
.48%	29	.73%	30	.70%	41	.78%	39

Type of Handicap (1979)

	Total	Avg./Institution	N
Mobility	156	5	30
Hearing	89	5	18
Vision	57	2	26
Learning Disability	36	4	9
Other	325	27	12

Since 1977, handicapped students have been roughly 0.7 percent of total enrollment, and the actual number of handicapped students per institution is modest. Handicaps at these institutions are spread evenly among types, forcing the institutions to meet a range of needs and to prepare a range of accommodations.

The percentage of total budgets devoted to these students is shown in table 7c.

Table 7c: Percentage of Total Budget

Year	Facilities Dollars/ Capital Budget Avg./Institution	N	Program & Service Dollars/E&G Budget Avg./Institution	N
1976-77	2.45%	6	1.35%	5
1977-78	9.76%	12	1.16%	5
1978-79	6.54%	28	1.68%	8
1979-80	10.27%	21	.58%	9
1980-81*	22.23%	13	.64%	5

*projected

It appears that as funds increase in the facilities budget, they decrease in the E&G budget.

Table 7d shows spending for facilities and programs in the last 5 years.

Table 7d: Expenditures for Handicapped Students by Year

Year	Facilities (000) N	Total	Avg.	Programs (000) N	Total	Avg.
1976-77	7	$ 51	$ 7	5	$113	$23
1977-78	13	81	6	6	140	23
1978-79	31	386	12	9	194	22
1979-80	31	411	13	11	206	19
1980-81*	20	377	19	6	205	34

*projected

Total expenditures for facilities and averages per institution slowly increased. As these are independent institutions receiving little public funding, it is apparent that they have consciously tried to set funds aside to make campuses accessible, that they spent little before Section 504 was enacted, and that since 1976 they have been "catching up." The projected amount, for the most part funded internally, is higher than in previous years, which means that these institutions acknowledge the continued existence of the problem even though the date for compliance was June 3, 1980. Among responding institutions, expenditures for programs and services average somewhat higher than those for facilities, but most institutions cannot account for dollars spent on P&S. The total spent for facilities is $717,653 (an average of $35,883 for 20 institutions). Only six institutions could account for P&S funds. The total was $700,148 (an average of $116,691). Both figures are for the five years from 1976-77 to 1980-81. These numbers differ from those in table 7d because a different group of respondents is included.

Another way of looking at expenditures is shown in table 7e.

Table 7e: Program and Service Expenditures for Handicapped Students

Year	N	Avg./Institution	Total
1976-77	5	$1,792	$ 8,961
1977-78	6	1,394	8,366
1978-79	9	2,192	19,724
1979-80	11	1,223	13,454

Thirty institutions have staff for handicapped students. These respondents know more about those working in specific areas than they do about the amount and type of dollars used to fund the position. Average time spent is 0.83 FTE (N=27). The student/staff ratio is so high (40,124:1, N = 25) that it is unreliable as a basis for comparisons.

The projected dollar amount needed to make these campuses accessible is high. The total for the 40 institutions responding is $11,066,000 (an average of $276,000 per institution), and most of the work remains to be done.

Group 8: Independent 2- and 4-Year Institutions
Enrollment: 2,500 to 10,000
Number of responses: 40

Overall enrollment growth has been consistent and moderate at these medium-sized, independent institutions.

Table 8a: Total Fall Enrollment (FTE)

Year	N	Total	Avg./Institution
1976	40	181,499	4,538
1977	40	185,113	4,628
1978	40	187,062	4,677
1979	40	191,639	4,791

Table 8b gives the percentage and average per institution of students identified as handicapped.

Table 8b: Percentage of Students Identified as Handicapped

1976	N	1977	N	1978	N	1979	N
.54%	17	.47%	20	.43%	25	.51%	31

Type of Handicap (1979)

	Total	Avg./Institution	N
Mobility	306	10	32
Hearing	47	2	23
Vision	115	5	24
Learning Disability	16	2	9
Other	139	12	12

N = number of institutions responding

The number of institutions aware of handicapped students is increasing. All types of handicaps are represented somewhat equally at these institutions, implying that these institutions must be ready to handle all types of impairments.

The percentage of capital and E&G budgets set aside for making facilities and programs accessible is shown in table 8c.

Table 8c: Percentage of Total Budget

Year	Facilities Dollars/ Capital Budget Avg./Institution	N	Program & Service Dollars/E&G Budget Avg./Institution	N
1976-77	.9%	11	.05%	3
1977-78	16.6%	18	.03%	9
1978-79	9.9%	25	.02%	13
1979-80	6.8%	25	.04%	16
1980-81*	5.4%	15	.04%	10

*projected

At these institutions, accounting for the above expenditures is improving, but the amount expended is small. The percentage spent for facilities varies greatly from year to year, while the percentage for P&S has basically remained unchanged. Though the amount for P&S declined as a percentage of the E&G budget, it has not changed greatly because overall E&G budgets have increased.

Table 8d: Expenditures for Handicapped Students by Year

Year	Facilities (000) N	Total	Avg.	Programs (000) N	Total	Avg.
1976-77	12	$ 102	$ 8	3	$ 18	$6
1977-78	19	783	41	9	35	4
1978-79	26	727	28	13	65	5
1979-80	30	1,018	34	17	112	7
1980-81*	23	832	36	12	73	6

*projected

One noticeable trend is that more institutions are aware of dollars spent in 1979-80 than in 1976-77.

Expenditures for facilities for the five years totaled $1,663,063 (an average of $87,530 for 19 institutions). The 10 institutions reporting expenditures for programs and services spent an average of $12,555; the total equaled $125,550. These amounts differ from those in table 8d because a different group of respondents is included.

Table 8e shows expenditures for programs and services for handicapped students.

Table 8e: Program and Service Expenditures for Handicapped Students

Year	N	Avg./Institution	Total
1976-77	3	$166	$ 499
1977-78	7	485	3,395
1978-79	11	573	6,301
1979-80	14	482	6,754

Even though amounts expended for programs and services were small, 31 of the 40 institutions have staff for handicapped students. Average staff time is low, 0.92 FTE (N=28), and the student/staff ratio is high, 469:1 (N=24).

This group projected a total need of $7,561,000 (N=28), which is more than four times the amount already spent.

Group 9: 4-Year Independent Institutions
Enrollment: 10,000+
Number of responses: 16

These 4-year independent institutions are universities. By definition, they serve many purposes and answer the needs of many different types of students.

Table 9a: Total Fall Enrollment (FTE)

Year	N	Total	Avg./Institution
1976	15	215,340	14,356
1977	16	230,869	14,429
1978	16	233,240	14,577
1979	16	241,878	15,117

Enrollment has grown steadily and consistently in the past 4 years. The percentage of students identified as handicapped, however, has grown faster (except in 1978-79).

Table 9b: Percentage of Students Identified as Handicapped

1976	N	1977	N	1978	N	1979	N
.36%	7	.44%	10	.35%	13	.51%	15

Type of Handicap (1979)

	Total	Avg./Institution	N
Mobility	344	25	14
Hearing	68	6	12
Vision	144	10	14
Learning Disability	67	6	11
Other	383	35	11

N = number of institutions responding

Similarly, the number of respondents aware of handicapped students is increasing, which can only improve the education and treatment of these students. It is probably true that some students may not be identified as handicapped but may need special services. The campuses in this group have more students in the mobility-impaired category than in the three other specific categories of handicaps.

Table 9c gives expenditures for handicapped students as a percentage of total capital and E&G budgets.

Table 9c: Percentage of Total Budget

Year	Facilities Dollars/ Capital Budget Avg./Institution	N	Program & Service Dollars/E&G Budget Avg./Institution	N
1976-77	3.84%	9	.01%	5
1977-78	1.24%	11	.01%	6
1978-79	1.75%	12	.01%	8
1979-80	4.24%	10	.02%	10
1980-81*	4.80%	7	.02%	5

*projected

No trend is apparent for institutions that depend almost entirely on internal funding, but the percentage of the budget designated to make facilities accessible does vary from year to year. The percentage of capital budgets allocated to handicapped students is very small and in actual dollars is probably unchanged because of inflation.

Table 9d: Expenditures for Handicapped Students by Year

Year	Facilities (000) N	Total	Avg.	Programs (000) N	Total	Avg.
1976-77	9	$ 384	$ 43	5	$ 48	$10
1977-78	12	443	37	6	95	16
1978-79	13	1,106	85	8	142	18
1979-80	14	2,585	185	10	203	20
1980-81*	10	2,296	230	5	169	34

*projected

Though the number of respondents increased in the first years, fewer respondents are willing to project needed funds. The average amount spent for facilities has more than quadrupled from 1976 to 1979 and doubled for P&S.

For seven institutions, the total spent on facilities is $3,180,685 (an average of $454,384 per institution). Expenditures for programs and services total $253,940 (an average of $84,647 (N=3)). The numbers in this paragraph differ from those in table 9d because a different group of respondents is used.

Table 9e: Program and Service Expenditures for Handicapped Students

Year	N	Avg./Institution	Total
1976-77	3	$ 440	$1,320
1977-78	4	1,659	6,635
1978-79	6	978	5,869
1979-80	9	789	7,101

All of the institutions have staff for handicapped students, but not all could account for funds to pay for these staff. Average time devoted to handicapped students is 1.43 FTE (N=16), and the student/staff ratio averages 155:1 for 15 institutions.

The total projected amount for compliance for 11 institutions is $5,371,000.

Conclusion

Though these institutions have been grouped according to certain traits (size, type, and governance), it is probable that administrators, faculty, and staff at each institution have differing ways of facing issues concerning handicapped students. It cannot be assumed that a group of institutions with similar characteristics will act uniformly. With the understanding that each institution is unique, however, some general observations may be made.

Enrollment has increased for all groups since 1976. Table 10a shows the overall growth for all institutions, for public institutions, and for independent institutions.

Total enrollment in fall 1979 was 11,669,429.*

Enrollment for institutions included in this section of the study totaled 3,125,113 (27 percent of total enrollment). This number is not to be used for projections or inference; it has been included only to provide perspective.

Table 10b summarizes the percentage of students identified as handicapped.

The percentage of students identified as handicapped has steadily increased. This could mean that the number of students has increased, partly as the result of passage of section 504, or that the method of identifying handicapped students has improved.

Now that funds are available and people have been hired, it is easier to identify these students. The actual number of handicapped students may not have increased, but those who once went uncounted are now being counted. This can be seen in the figures for 1978 and 1979, which do not show dramatic change as do those for 1976 and 1979.

Table 10c indicates the types of handicaps these students have and which institutions they are attending.

*Charles J. Andersen, ed., *1980 Fact Book for Academic Administrators*, Washington, D.C., American Council on Education, 1980.

Table 10a: Fall Enrollment

Year	All Institutions N	All Institutions Total	All Institutions Avg./Institution	Public N	Public Total	Public Avg./Institution	Independent N	Independent Total	Independent Avg./Institution
				Fall Enrollment (FTE)					
1976-77	288	2,927,677	10,166	181	2,467,357	13,632	107	460,320	4,302
1977-78	292	3,020,101	10,343	184	2,539,386	13,801	108	480,715	4,451
1978-79	297	3,055,764	10,289	186	2,568,157	13,807	111	487,607	4,393
1979-80	295	3,125,113	10,594	185	2,623,617	14,182	110	501,496	4,559

Table 10b: Percentage of Students Identified as Handicapped

Year	All Institutions Avg./Institution	All Institutions N	Public Institutions Avg./Institution	Public Institutions N	Private Institutions Avg./Institution	Private Institutions N
1976-77	.70%	146	.82%	93	.49%	53
1977-78	.78%	179	.87%	119	.60%	60
1978-79	.83%	215	.99%	137	.56%	78
1979-80	.87%	241	1.00%	157	.63%	84

Table 10c: Distribution of Handicaps

	All Institutions Total	All Institutions Avg./Institution	All Institutions N	Public Institutions Total	Public Institutions Avg./Institution	Public Institutions N	Independent Institutions Total	Independent Institutions Avg./Institution	Independent Institutions N
Mobility	9,035	40	224	8,265	56	149	770	10	75
Hearing	1,753	10	183	1,550	12	131	203	4	52
Vision	2,563	13	202	2,247	16	138	316	5	64
Learning Disabled	1,617	14	113	1,498	18	84	119	4	29
Other	7,928	57	140	7,082	67	106	846	25	34

Mobility impairments are the most common handicap at institutions generally. At private institutions more students have mobility impairments than any other *specific* handicap (the nonspecific category "other" is larger and is comprised basically of medical impairments). It is easier to count mobility-impaired individuals, hence the large number for this group. Given the "facilities mentality" that has pervaded higher education for the past 5 years, more emphasis has probably been placed on finding and counting the students with impaired mobility than on counting students with other handicaps.

In many instances, it is less difficult to provide the services mobility-impaired students need to continue their education, because those services are more clearly defined. Further, expenditures making a facility accessible occur once, while those for programs and services for other impairments (for example, readers for the blind, or medical care for those with medical disabilities) recur every year.

Within the sample, learning-disabled students are more likely to attend public 2-year institutions, whose mission is both community service and job training. These institutions also have a higher number of older students, who are more likely to become impaired as they age.

All groups report handicapped students in the student population. (A minority of respondents were unable to account for any at their particular institutions.) In all eight groups, expenditures for facilities comprise a greater percentage of the capital budget than expenditures for programs and services do of the E&G budget (see table 10d).

No overall trend shows what is set aside to make facilities accessible and to provide programs and services for the handicapped.

For public institutions, the number of respondents is nearly the same for both facilities and programs. The percentage of the total capital budget spent on facilities is consistently higher than the percentage of the total E&G budget spent on programs and services for handicapped students. This emphasis on expenditures for facilities is basically the result of the June 1980 deadline for campus accessibility.

Table 10e gives the actual amount of dollars spent for facilities and programs.

Table 10d: Percentage of Total Budget

Year	Facilities Dollars/Capital Budget: All Institutions Avg.	All Institutions N	Public Institutions Avg.	Public Institutions N	Independent Institutions Avg.	Independent Institutions N	Program & Service Dollars/E&G Budget: All Institutions Avg.	All Institutions N	Public Institutions Avg.	Public Institutions N	Independent Institutions Avg.	Independent Institutions N
1976-77	4.6%	82	5.6%	56	2.3%	26	.2%	70	.14%	57	.5%	13
1977-78	8.7%	116	7.8%	75	10.5%	41	.2%	93	.17%	73	.3%	20
1978-79	6.6%	162	6.5%	98	6.9%	64	.3%	120	.29%	91	.5%	29
1979-80	7.9%	153	8.1%	98	7.7%	55	1.1%	122	1.45%	88	.2%	34
1980-81*	15.6%	76	19.1%	41	11.5%	35	.3%	58	.28%	39	.2%	19

*projected

Table 10e: Expenditures for Handicapped Students by Year

Facilities (000)

Year	All Institutions N	Total	Avg.	Public Institutions N	Total	Avg.	Independent Institutions N	Total	Avg.
1976-77	88	$ 5,396	$ 61	60	$ 4,859	$ 81	28	$ 537	$19
1977-78	123	7,448	61	79	6,141	78	44	1,307	30
1978-79	174	12,038	69	105	9,871	94	69	2,168	31
1979-80	198	19,612	99	124	15,615	126	74	3,997	54
1980-81*	124	22,859	184	71	19,354	273	53	3,504	66

*projected

Programs (000)

Year	All Institutions N	Total	Avg.	Public Institutions N	Total	Avg.	Independent Institutions N	Total	Avg.
1976-77	72	$ 2,933	$ 41	59	$ 2,755	$ 47	13	$ 178	$14
1977-78	95	4,586	48	74	4,316	58	21	270	13
1978-79	123	7,353	60	93	6,952	75	30	402	13
1979-80	140	9,554	68	103	9,046	88	37	508	14
1980-81*	84	6,421	76	62	5,984	97	22	436	20

*projected

All types of institutions are spending more—in most cases substantially more—for facilities than for programs and services. Public institutions seem to be spending more than independent institutions, which is to be expected because more students and more handicapped students attend public institutions. Many institutions spent no money, particularly in 1976-77 and 1977-78, in either category. Some institutions have been unable to account for funds spent, and the actual amount spent may therefore be understated.

Far fewer institutional funds are allotted to programs and services for handicapped students than to facilities. This is partly because the only P&S funds respondents can account for are those funds that come directly to the institution. For example, vocational rehabilitation funds go directly to the student and are therefore not included in the amounts in table 10e. Dollars in the table reflect only institutional funds, not total dollars spent. Responses increased steadily from year to year, perhaps indicating that more schools have funds available since section 504 was enacted. In addition, institutions are keeping better records on funds expended for programs.

Table 10f shows the total amounts spent for facilities and for programs and services for the 5 years. These numbers differ from those in table 10e because a different set of respondents was included.

Independent institutions appear to spend less for the handicapped than do public institutions. Because the latter are externally funded, they have more funds available than do independent institutions, which are internally funded.

Table 10g indicates that if independent institutions wish to provide these services, the funds must come from institutional sources. Public institutions have the option of requesting funds from other sources, such as local, state, and federal governments. For those independent institutions that do expend their own funds, the average per institution is high. The number of such institutions, however, is small.

The large public 2-year institutions have spent more than the other groups, partly because the majority of handicapped students receive their education at such institutions.

Table 10h gives the number of institutions that fund staff to assist handicapped students and information about that staff.

Table 10f: Total Expenditures for Facilities and for Programs and Services

	Facilities (000) N	Total	Avg.	Programs (000) N	Total	Avg.
All Institutions	129	$40,692	$315	79	$15,372	$195
Public Institutions	83	35,130	423	60	14,292	238
Independent Institutions	46	5,561	121	19	1,080	57

Table 10g: Program and Service Expenditures for Handicapped Students

Year	All Institutions Total	Avg./Inst.	N	Public Institutions Total	Avg./Inst.	N	Independent Institutions Total	Avg./Inst.	N
1976-77	$34,393	$603	57	$23,613	$513	46	$10,780	$ 980	11
1977-78	47,085	611	77	28,689	478	60	18,397	1,082	17
1978-79	73,747	709	104	41,853	537	78	31,894	1,227	26
1979-80	85,020	669	127	58,045	618	94	26,975	817	33

Table 10h: Institutions with Staff to Assist Handicapped Students

	No. With Staff	N	FTE	N	Students/Staff	N
All Institutions	238	298	2.2	220	5,345:1	196
Public Institutions	162	187	2.8	150	233:1	133
Independent Institutions	76	111	1.0	70	16,137:1	63

Table 10i: Methods Used to Identify Handicapped Students

	All Institutions	Public Institutions	Independent Institutions
N	275	174	101
Use a single method	101	48	53
Use 2 methods (a combination of any two)	91	60	31
Use 3 methods	48	39	9
Use 4 methods	35	27	8
Use 1st method (voluntary statement on admission form)	190	120	70
Use 2nd method (referral from state rehabilitation agencies)	153	119	34
Use 3rd method (voluntary statement at registration)	112	80	32
Use 4th method (other)	112	74	38

The student/staff ratio varied greatly, depending on the type of institution. Not all institutions with staff listed funds for programs and services; thus it is difficult to determine how these staff positions are funded.

Most institutions use only one method to identify handicapped students. Public institutions are more likely to use two methods; independent institutions, one. The most popular method, whether alone or with other methods, is a voluntary statement by students on the admissions form. At public institutions the second choice is the referral from state rehabilitation agencies, while independent institutions use some other method.

Appendix A
Questionnaire

NACUBO National Association of College and University Business Officers
One Dupont Circle, Suite 510, Washington, D.C. 20036 • 202/861-2500

May 1980

Dear NACUBO Member:

As you know, the deadline for compliance with the handicapped accessibility requirements of section 504 is June 3, 1980. While the financial impact of these regulations on higher education institutions is very substantial, little information currently exists on the expenditures which have already been made by colleges and universities in their efforts to achieve compliance. The enclosed survey, which has been sent to 800 institutions, is the first large-scale effort to compile such information. The results of this survey, in addition to providing information on the mix of available state, federal, and private funding sources, will also serve as a good indication of the level of commitment in this area which has already been demonstrated by higher education institutions. The results may also be of considerable use in clarifying the extent to which available resources fall short of the financial demands imposed by section 504. The results of the survey will be published in the NACUBO Business Officer later this year.

Please let me assure you that your responses to the survey will be held in the strictest confidence. The results will be made public in a compiled form. If you should find that your institution has spent no money specifically on handicapped accessibility, please indicate so on the survey. This information is essential to assure the accuracy of the survey results.

I am aware that this is a busy time of year for you, but I do believe that the time spent completing the survey will be worthwhile. We did pilot test this form with eight schools, and it has been revised to eliminate confusion and to minimize the time necessary for completion. If you or other individuals involved in completing the survey have any questions, please call either Roy Nord or Laurel Radow in our national office at (202) 861-2535. Please return the survey in the enclosed envelope by the due date indicated on the back page.

Thank you very much for your assistance.

Sincerely,

D. F. Finn
Executive Vice President

NOTE: If your institution serves as the system office for a multi-campus institution, please provide aggregate figures for all campuses. If this is not possible, please indicate below which campuses are reported.

DFF/kcd

NACUBO

PLEASE RETURN BY *JUNE 20, 1980*

Institutional Packaging of Funding for the Handicapped Under Section 504

FUNDING SOURCES	FACILITIES EXPENDITURES FOR HANDICAPPED PERSONS					PROGRAM EXPENDITURES FOR HANDICAPPED STUDENTS				
	FY 76-77	FY 77-78	FY 78-79	FY 79-80	FY 80-81**	FY 76-77	FY 77-78	FY 78-79	FY 79-80	FY 80-81**
INSTITUTIONAL SOURCES*										
FEDERAL TARGETED SOURCES*										
STATE TARGETED SOURCES*										
PRIVATE SOURCES*										

NOTES:
*See definitions on the back page.
**If budget request figures are available for 1980-81, include them; if not, insert XXXs in these spaces.
No information available—indicate by marking the line with XXXs.
Zero amount —indicate by marking the line with a zero (0).

Person(s) completing questionnaire

Name _____ Title _____

Name _____ Title _____

Questions:

1. *List major programs which provided your institution's "federal targeted sources."*

2. *List major state programs which provided your institution's "state targeted sources."*

3. *If all or part of your "state targeted sources" were provided by line item in the state budget, check this box.* ☐

GENERAL INSTITUTIONAL INFORMATION

A. Name of institution: _____ FICE code _____ State _____

B. Total expenditures (all categories) (in thousands of dollars):

1976-77	1977-78	1978-79	1979-80	1980-81**

C. Total capital expenditures for facilities (exclude maintenance and operations) (in thousands of dollars):

1976-77	1977-78	1978-79	1979-80	1980-81**

D. Total educational and general expenditures (in thousands of dollars):

1976-77	1977-78	1978-79	1979-80	1980-81**

E. Total fall enrollment (headcount):

1976	1977	1978	1979

F. Total fall enrollment of handicapped students (headcount):

1976	1977	1978	1979

G. Indicate the numbers of handicapped students in each of the following categories who were enrolled in fall 1979:

Mobility Impaired _____ Hearing Impaired _____

Visually Impaired _____ Learning Disabled _____

Other (specify) _____

H. How does your institution identify handicapped students? (Check appropriate boxes.)

Voluntary statement on admission? ☐ Referrals from state rehabilitation agencies? ☐

Voluntary statement at registration? ☐ Other? (specify) _____

I. Do the section 504 regulations restricting pre-admission inquiries significantly restrict your institution's ability to make necessary accommodations for handicapped students? Yes ☐ No ☐ If yes, explain. _____

J. Does your institution presently have staff assigned to coordinate or provide services for the handicapped? Yes ☐ No ☐

If yes, indicate the number of such staff as a fraction or number of FTE(s): _____

K. Estimate the total additional expenditures (after FY80-81) which will be needed to achieve compliance with section 504 (in thousands): _____

DEFINITIONS

HEADCOUNT:	Total enrollment as of October 15, which includes undergraduate, graduate, full time, part time, credit, non credit and unclassified students.
INSTITUTIONAL SOURCES:	All funds expended by the institution for handicapped accessibility which are not identified as "federal targeted sources," "state targeted sources," or "private sources." "Institutional sources" are contained in operating and capital budgets, unrestricted gifts and endowments, and discretionary state funds.
FEDERAL TARGETED SOURCES:	Funds specifically earmarked by the federal government for the purpose of improving the accessibility of programs or facilities.
STATE TARGETED SOURCES:	State funds which are directed by statute toward the improvement of facility or program accessibility. Such sources include state budget line items earmarked for handicapped students, as well as funds provided to the institution such as those from state offices for the blind.
PRIVATE SOURCES:	Restricted gifts given directly to the institution or its endowment for the specific purpose of aiding the handicapped.
FACILITIES EXPENDITURES FOR HANDICAPPED PERSONS:	Expenses for long-term additions specifically to improve the accessibility of the institution for the handicapped. Items which are not included are funds for general renovation or construction which incidentally make buildings accessible.
PROGRAM EXPENDITURES FOR HANDICAPPED STUDENTS:	Include institutional services that specifically assist handicapped students, that is, resource centers, handicapped services programs or offices, readers, notetakers, tutors, interpreters, special library equipment, and special classroom equipment.

PLEASE RETURN BY JUNE 20, 1980

TO: NACUBO
One Dupont Circle, N.W.
Suite 510
Washington, D.C. 20036
ATTN: Financial Management Center

If you have any questions, please call:

Roy Nord or
Laurel Radow
202/861-2535

NACUBO Log# _____

Appendix B
State Programs

This appendix includes only those state programs listed in the returned funding questionnaire. Institutions of the same type in the same state are not all aware of the same state programs. Many of the following are not official names or titles.

Alaska

State Rehabilitation Services

Arkansas

State Section 504 Program for Institutional Handicapped
Elimination of Barriers for the Handicapped (in state-owned buildings)

Arizona

State budget funds (1978-79 to 1979-80)
State Department of Rehabilitation (Interpreting Services)—1975-78 (I&E Fund)
Special services-handicapped improvements

California

Capital Outlay Fund for Higher Education
Capital budget funds
Program change proposal-initiated state budget line item
California Administrative Code deficiencies (handicapped)
State funds for support services
State funds for coordinator
California Office of Vocational Rehabilitation
AB2670—provides funding to community colleges for support services and program accessibility
AB77—direct excess costs administered by the chancellor's office for community colleges

Colorado

Colorado Commission on Higher Education
State legislative appropriation
Colorado Division of Rehabilitation Services
Allocation from Colorado governor's office
College for Living

Delaware

FY 1980 State Capital Improvement Program

District of Columbia

State of New York—Department of Vocational Rehabilitation

Florida

Funding has been earmarked to address an approved list of minor projects, e.g., lowering water coolers, widening doors
State University System—Architectural Barrier Removal (Phase I)
Auxiliary aids appropriations from Florida legislature
North Campus Disabled Student Services and Community Instructional Services
Florida Department of Education Grant under "Auxiliary Learning Aids for Handicapped Students in Postsecondary Education" (includes personnel and purchase of aids)
Vocational rehabilitation
Accessibility for handicapped to classrooms, theater, parking, and other facilities
Annual legislative appropriation for facilities accessibility

Idaho

Income Fund
Capital development funds from the Capital Development Board
Bond revenue repair and maintenance funds

Illinois

Disadvantaged grant
Illinois Department of Rehabilitation Services paid a portion of the cost of an interpreter
Capital Development Board (for facilities expenditures)
Bond repair and maintenance funds (facilities expenditures for dorms, apartments, and unions)

Indiana

Indiana Vocational Rehabilitation Services
Funds for the expansion of Resource Center for the Visually Impaired (Bloomington campus only)

Kansas

State Board of Regents program for accessibility for handicapped, first funded in FY 1980 for both campuses
General allocation to Board of Regents

Kentucky

Bureau of Rehabilitation Services
Bureau for the Blind
Council on Higher Education Access for Handicapped Construction Project Allotment

Louisiana

Vocational rehabilitation

Maryland

General construction loan (site improvements, building renovations)
General and special funds (student services budget)
Supplemental budget requests by Board of Trustees for State Universities and Colleges

Massachusetts

Construction of a parking lot for handicapped students

Michigan

Vocational rehabilitation-equipment

Mississippi

Two state-provided FTE positions to help handicapped students

Montana

State budgeted line item for facilities update

Nebraska

State of Nebraska—LB 309 Task Force

New Hampshire

FY 1982-83 Biennial Capital Request indicates $3,720,000 for university system plant modifications related to Section 504

New Jersey

Department of Higher Education—miscellaneous capital projects

New Mexico

State grant for rehabilitation services (through University of New Mexico's Department of Guidance and Counseling)
State bond issue proceeds

New York

Rehabilitation for buildings
State University Construction Fund—regular dollars
Accessibility program including walkways, replacement of heavy doors, elevator modifications, and other items

North Carolina

Vocational rehabilitation
Department of Human Resources
Other state agencies for the blind

Ohio

State capital appropriations
Capital Improvements Bill (AM. Sub. H.B. 687)
Capital appropriations by the Ohio State Legislature, administered through the Ohio Board of Regents, to renovate existing facilities to accommodate handicapped students
AM. Sub. H.B. 618 for public institutions of higher education

Oklahoma

Capital improvement funds for higher education, part of campus master plan approved by State Regents for Higher Education
Oklahoma State Rehabilitation Program
Oklahoma T.A.G. Program

Oregon

Capital construction planning—1978-79
Capital construction—1979-81
Systemwide architectural barrier removal, funded by 1979 legislative assembly (capital construction project)
Vocational rehabilitation

Pennsylvania

Institutional capital budget
Bureau of Vocational Rehabilitation
Bureau of Visually Handicapped

South Carolina

State capital improvement bonds

Tennessee

Division of Services for the Blind, Tennessee Department of Human Services (assists blind students to make better use of education experience)
Special allocation by Tennessee State Legislature at its 1978-79 and 1979-80 sessions
Statewide handicapped renovation funds for higher education
Tennessee Division of Vocational Rehabilitation

Texas

Texas Rehabilitation Commission (TRC)
Texas Commission for the Blind and Deaf
Handicapped counseling program funded by the Texas Department of Education
Texas Education Agency (TEA)-Technical Excess Funding Grant
Special services for disadvantaged students
State plan for vocational education—VOE Act of 1963, amended by PL 94-482

Vermont

State legislative appropriations

Virginia

Commonwealth of Virginia State Legislature—Capital Outlay Appropriation
State Appropriation Act for 1978-80 and for 1980-82
Virginia program to provide access for the handicapped

Washington

State appropriations in general university operating budget
1979-81 capital budget for the University of Washington
Appropriation by 1979 legislature to meet one-half of estimated needs
Vocational education (handicapped)

Wisconsin

Wisconsin State Division of Facility Management—State Building Trust Fund
Increased access—capital budget
Special equipment for the visually impaired

Section IV: Prototype for an Assistive Devices Directory For Colleges and Universities

Purpose of the Directory

Section 504 regulations have had major impact on policy and decision-making processes at postsecondary institutions. The regulations are bringing to the campus students who several years ago would not have been candidates for a college education. "Program accessibility," a key phrase in the regulations, mandates equal educational opportunity for students with physical limitations.

The task of providing such opportunity requires a significant financial investment for most colleges and universities. Many have spent large sums to eliminate physical barriers on their campuses. Unfortunately, the task of providing accessible programs requires more than modified bathrooms, curb cuts, and ramps. Funds must also be expended to make program *content* accessible. It is this second area of concern—accessibility of programs rather than facilities—that this directory seeks to address.

To a surprising extent, the difficulties that institutions face in their attempts to provide equal opportunity for handicapped students do not arise from the presence of physical barriers to access but rather from barriers to learning in the classroom, laboratory, library, and gymnasium. Many, although far from all, of these barriers can be overcome by creative use of a variety of available assistive devices. While some of these devices are expensive, high-technology items, many are both simple and moderately priced.

The primary purpose of this directory is to inform those who purchase products for use by handicapped students of the availability of assistive devices. It is hoped, however, that the directory will also be useful to other members of the college community. Many of the products described may be of interest either to students who wish to buy them directly, to managers of college bookstores who might stock such items for the convenience of handicapped students, or to career counselors of handicapped students.

The directory is also intended to serve as a guide to available sources of information and expertise. A number of associations, colleges, universities, rehabilitation research centers, and other organizations have developed innovative approaches to the problems that can confront handicapped individuals in both work and academic environments. The directory includes several appendixes, which list some of these sources of information and service.

A third purpose of the directory is to serve as a prototype for more detailed efforts. The decision to develop this document was prompted by the lack of any single comprehensive source of information focusing on products for college and university students. Although this directory is relatively comprehensive, it is not exhaustive. Many devices under development commercially and as on-site modifications by individuals or institutions might be more useful in some situations than the devices listed in this directory. The summary descriptions in this publication reflect the variety of products available, but they do not evaluate quality or cost effectiveness, or recommend specific applications for particular devices.

It should be emphasized that this is a directory, not a catalog. It describes the kinds of products available and some of the sources for these products. The prices included in the directory are intended only to provide an indication of cost. Potential purchasers of these products must rely on direct information from the manufacturer or other sources to properly evaluate and compare prices, quality, and specifications. In many cases the product source may also be able to provide valuable information about modifications to and alternative uses of the product.

Recommendations for Purchasers

Most of these suggestions for purchasing assistive devices may seem rather obvious, but they are frequently ignored, with the result likely to be purchase of an inappropriate, inadequate, or unnecessarily expensive pro-

duct. The following suggestions outline a two-stage process for evaluation: first, defining the need that the product must serve; and second, selecting the product to meet the need.

Defining the Need

Student Needs: Talk to the student(s). Determine the specific limitations and abilities of potential user(s) of the product, how the student has adapted to similar situations in the past, and why one product or approach is preferred to another. Solicit suggestions for possible solutions.

Student Objectives: Identify the program goals of the affected student, if possible. Also attempt to identify recreational and/or athletic interests.

Program Requirements: Carefully evaluate the program or activity for which a product is being purchased. Identify all specific activities that are required for participation (e.g., is reaching, talking, or walking required? How much? Can the same ends be accomplished by using substitutes for these activities?) Note that *all* program activities must be accessible, including afterhours lab work and field trips. Identify aspects of the program under consideration that might pose a safety hazard for handicapped students, and determine whether those hazards can be eliminated.

Information Updating: Maintain communications with students, faculty, and sources of information with regard to products for the handicapped to insure that products already purchased are adequate and that new purchases are not outmoded or unnecessarily expensive.

Selecting the Product

Cost Effectiveness: Compare attributes and prices of similar products. Evaluate the advantages and disadvantages of buying a commercially available product, a custom design, or a do-it-yourself solution.

Functional Requirements: Using the results of step 3 above (Program Requirements), evaluate the capabilities of the product. Determine whether the device will fit in the space where it is to be used and whether in fact it will serve the purpose for which it is intended. (Not all "accessible" water fountains can be used by people in wheelchairs, for example.) Pay attention to the general atmosphere in which the device will be used.

Adaptability and Versatility: Determine whether the device can be modified to serve purposes other than the one for which it is immediately intended. Is it useful for more than one type of disability or in more than one subject area? Can it be used by more than one disabled student? By nondisabled students?

Creativity: Consider items that are not specifically designed for educational purposes or as assistive devices. A variety of household products and equipment designed for use in physical therapy can be creatively applied to produce inexpensive solutions.

Common Sense: Investigate both product and source for reliability. Businesses that sell products for the handicapped are neither more nor less scrupulous than other businesses.

Procedure

Procedures for acquiring and compiling the information in this directory have had a substantial effect on its contents. The following brief methodological review is intended to give the reader only a general understanding of the development of the directory and an indication of the reasons for various constraints on that development. Those interested in a more comprehensive explanation of the methods should contact NACUBO staff.

The process of developing the directory involved the completion of five major tasks:

- Identification of the audience for which it was primarily intended.
- Definition of scope and purposes.
- Development of an appropriate organizational format.
- Search for and collection of information.
- Selection and compilation of information.

Identification of Audience: The section 504 task force first had to determine the primary users of such a directory. The range of possible users includes handicapped students, professional coordinators of services for handicapped students, college administrators, academic officials, faculty, and managers of campus activities and services. Potential users of the document thus include all potential purchasers of assistive devices for handicapped college students. In recognition of the large number of institutions that are not able to hire professionals to coordinate services for handicapped students, the committee decided to focus on the needs of potential purchasers who are not professionally familiar with the range and uses of available devices. The directory is intended to be nontechnical and easily used by handicapped students.

Definition of Scope and Purpose: To avoid duplication of similar efforts being carried out by other organizations, the committee adopted the following set of constraints on the scope and purpose of the project:

- To exclude items (such as wheelchair ramps and bathtub lifts) that are designed primarily to provide access to physical facilities.
- To exclude assistive devices designed for specific vocational applications.
- To exclude personal aids (such as conventional wheelchairs and hearing aids).

- To exclude "daily living aids" that do not have a direct educational application.

The first two constraints were adopted because of other efforts currently underway to develop catalogs in those areas. The latter two were included to insure that the directory would be responsive to the specific needs of prospective users and because many catalogs of living aids and personal devices already exist.

These constraints were interpreted liberally in the course of the research. For example, the directory contains a number of devices that could be classified as "daily living aids" but that might be stocked by a college bookstore for the convenience of potential users. Together the constraints indicate the scope and purpose of the directory—that is, to provide simple descriptions of assistive devices that can be used to make higher education programs more rewarding for disabled college and university students.

Development of an Organizational Format: The organizational format evolved in response to three general criteria:

Functional Organization: The task force determined that the directory should be based on functional rather than medically defined impairments, since users of the catalog are likely to be better informed about functional necessities of program accessibility than about the functional implications of medically defined handicaps.

Simplicity: The directory is intended for use by laymen. To insure that the directory is easy to use, the number of functional categories has been kept to a minimum.

Common Sense: A common pitfall in efforts of this type is to allow the classification system to proliferate to the point where it becomes a hindrance to the user of the directory. To avoid this problem, the task force occasionally allowed logic to give way to common sense in developing the organizational format (three strictly "functional" and four subject-oriented classifications are used).

The directory could be improved with a broader range of products and a more complete list of functional impairments. Additional devices might include adaptive solutions and innovations that have been designed by individuals in various fields but that are not commercially available. The directory being developed at the University of California at Sacramento for the natural and applied sciences appears to be an effective means of classifying a broad range of devices with very specific applications, though it is less accessible to the layman.

Search for and Selection of Information: The search for products was based on a review of sources such as periodicals and national associations concerned with handicapped individuals, projects similar to this directory, government publications, and direct contacts with professionals at trade expositions. As a result of this effort, a letter explaining the purpose of the project and requesting any relevant information was sent to some 620 manufacturers. Approximately 200 responses to this mailing were received. The information was reviewed and, when it was insufficient, follow-up telephone calls were made. When the committee knew that a specific educative device existed, attempts were made to contact possible source(s) that had not responded. All information, catalogs, and fliers received were reviewed, and products meeting the criteria were identified and translated into directory entries.

Of the 620 letters mailed, a substantial number (approximately 20 percent) were returned as undeliverable. It was impossible for the task force to determine the cause of the returned letters, but it seems reasonable to assume that the number of returns reflects rapid movement in and out of this market. The search for additional sources of products continued throughout the project.

In the judgment of the project staff and the steering committee, the directory is a comprehensive compilation of aids and devices that are potentially useful for handicapped college and university students. It includes 282 entries, covering approximately 70 generically different products.

Overview of the Assistive Devices Market

In general, the market for assistive devices is characterized by two conditions: the low level of demand for most individual products and the resulting movement in and out of the market by manufacturers and distributors of those products. While recently both the range and availability of product types have increased considerably, manufacturers are frequently small or, in the case of major companies, the assistive devices manufactured tend not to be marketed as aggressively as most other product lines. Furthermore, the ideal product for many situations may not even be commercially available. A great variety of very useful devices has been developed by individuals for their own use.

One result of this combination of factors is that an exhaustive survey of available devices is virtually impossible. A specific problem might be addressed more efficiently by a custom-designed or noncommercial device than by the generally available products listed in this directory.

A second result is that sources for products can be difficult to locate. While gathering information for this project, the task force was unable to locate many potential sources that had been identified from advertisements or references in recent publications. Telephone follow-up of these cases frequently revealed that the company

or organization had moved, merged, or gone out of business, or was simply not listed under its advertised name.

A third effect of low demand and rapid change in the market is that prices can vary widely, both over time and among sources of similar products. Generally, prices for nonelectronic devices can be expected to increase more or less at the rate of inflation. Prices for similar products vary considerably from source to source, however. Because the project did not attempt to evaluate quality, it is impossible to determine if these variations reflect differences in quality or reliability. Price trends for the more expensive and sophisticated electronic devices are harder to predict. According to one major electronics firm, the low demand for these products tends to offset reductions in cost resulting from improved technology, and prices usually follow the inflation rate.

The low level of current demand means low advertising budgets and consequent difficulties in obtaining up-to-date information about available products. However, the situation may be altered somewhat by the rising activism of people with disabilities and by the requirements of section 504.

Users' Guide

Organizational Format: The directory is divided into six chapters corresponding to six classifications of impairment: hearing, manipulation, mobility, multiple impairments, speech, and vision. Entries within each of these chapters are categorized by function and impairment.

Three functional and four subject area categories are used: reading; listening or viewing; writing or speaking; general applications; fine arts and crafts; natural sciences and mathematics; physical education, recreation, and athletics; and general education. Several of the impairment classifications do not include devices within every functional and subject area, either because the impairment does not limit activities with respect to some functions or because no applicable devices were located.

Six impairment classifications are largely self-explanatory, and no attempt has been made to rigorously define their meaning (e.g., to define hearing impairments in terms of decibel levels). However, a brief description of each category may be useful:

Hearing includes devices to aid all individuals with hearing limitations affecting their ability to perform functions required by college and university educational programs. Devices designed to overcome disabilities stemming from speech disabilities related to hearing impairments are *not* included in this category. Such devices have been classified as aids to speech.

Manipulation includes devices for individuals whose sense of touch or dexterity or fine motor skills are impaired.

Mobility includes devices for those confined to wheelchairs, or whose ability to move from place to place freely is limited by any other physical condition. This category also includes devices for those with heart conditions, missing or paralyzed limbs, or disabilities requiring crutches.

Multiple Impairments includes devices designed for use by individuals with a combination of handicaps. This category does *not* include devices that may be useful for more than one handicap or devices that may be used to overcome one disability for a person with multiple handicaps. Those devices are listed under the single, specific impairment to which they most aptly apply.

Speech includes devices for those with any speech difficulty, from a physical inability to talk or speak at a clearly audible volume to severe stuttering. This category also includes devices designed to aid hearing-impaired individuals overcome speech disabilities resulting from that impairment.

Vision includes devices for individuals with any limitation on their visual abilities.

Brief descriptions of the seven functional and subject categories follow:

Reading, Listening, or Viewing includes all devices that make those functions possible or that can be substituted for those functions in the learning process. Somewhat arbitrarily included in this classification are devices designed to facilitate two-way communications (e.g., telecommunications devices).

Writing or Speaking includes devices that make those functions possible or that provide suitable substitutes for them. (Note: These first two categories were initially defined as "Communication—Input" and "Communication—Output," respectively.)

General Applications includes those devices that are potentially useful to college and university students but that fall into no clear functional category. These devices might be classified as "daily living aids" or personal devices. Examples of the devices in this category are braille mailing tubes and household equipment.

Fine Arts and Crafts includes all devices that allow participation by handicapped individuals in activities such as drawing, sculpture, music, sewing, and drafting.

Natural Sciences and Mathematics includes devices with a direct or indirect application to use in the natural sciences and/or mathematics. (The natural sciences are broadly defined for the purposes of this classification.) Any device that can be used in the laboratory or for calculation is included here.

Physical Education, Recreation, and Athletics, broadly defined, includes a variety of devices ranging from exercise equipment to table games.

General Education includes devices that are too few

in number to warrant creation of a separate category or whose potential applications are too broad to fit any of the other six categories.

Alphabetization and Numbering: Entries within each functional and subject category are listed alphabetically by product name. In most cases the names used are generic or descriptive. When several substantially different products of the same generic type exist, multiple entries under a single generic name are used. (For example, "FM Receiver System" and "Induction Amplifiers" are described in separate entries under the heading "Amplifiers.") In those cases the entries are alphabetized first by generic name and then by specific name.

Entries are numbered sequentially throughout the directory without regard to chapter divisions. All cross-references and index citations refer to those entry numbers.

Prices: An indication of the range of prices for the product or products described is included at the end of each description if prices were available. The effective date of the prices quoted is indicated in parentheses on the same line as the price range. When prices were obtained from more than one manufacturer, the earliest effective date is shown. Prices quoted are intended only as rough indications of the cost of the devices described. In most cases the numbers are rounded off. Specific, up-to-date prices must be obtained directly from the manufacturer or other source.

Sources: Sources from whom the products may be obtained are listed below the price range in each entry. Addresses and telephone numbers for those sources are provided in appendix A.

Cross-references: To insure that products with a variety of possible applications are easy to locate, multiple entries and cross-references are used. A complete description of the product and its sources is entered under the most applicable category; additional entries for the product have been made in every other functional and impairment area where the product is potentially useful.

Appendixes: Appendix A lists all manufacturers and organizations that make or distribute the products described in the directory. Addresses and telephone numbers for suppliers are listed in alphabetical order by the first letter of the company or organization name.

Appendix B lists organizations that provide services for the disabled individual and a list of organizations that offer assistive device access systems. Each entry includes address, phone number, and descriptive material.

Appendix C lists information resources, including organizations that deal with issues affecting the handicapped and that are equipped to answer some of the questions that arise during the effort to provide accessibility. Also listed are publications (including periodicals) and audiovisuals that focus on or serve the handicapped.

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Reading, Listening, or Viewing

Amplifiers

1. Amplifier, Induction

Induction coil plate with earphone receiver to amplify sound. Sound is heard by placing the plate on a device such as a television set or record player. Sound waves pass through the plate. Sound can also be absorbed through the wiring from all around the room. For group listening, several units can be used at one time. Another sound absorption device is a pillow with two stereo speakers inside. Sound is amplified and vibrations felt from a sound source under the pillow such as a tape player or radio.

$9–$80 (1/80)

Alexander Graham Bell Association for the Deaf, Inc.

2. Amplifier, Telephone

Amplifier used with telephone unit. SEE no. 142 for further description.

$23–$28 (1/80)

Alexander Graham Bell Association for the Deaf, Inc.
G.E. Miller
Maddak, Inc.

3. Receiver System, FM

System consists of wireless microphone and FM receiver. Microphone can be worn by a lecturer or teacher so that amplified speech signals are picked up by the receiver. Receiver and a hearing aid are worn by the student. Speech signals can be understood in large and noisy environments. Battery operated.

$700–$1,000 (1/80)

Earmark, Inc.
Telex Communications

Communicators, Electronic

4. Speech Display System, Spectrographic

Visible speech display that shows acoustical representation of spoken language. Useful for language training. SEE no. 147 for further description.

$10,250 (4/80)

Spectraphonics, Inc.

Paper

5. Paper, Notetaker

Two-page packs of noncarbon paper that can be used by student notetakers to provide an extra copy of lecture notes for hearing-impaired student.

Price not available

National Technical Institute for the Deaf

Signaling Devices

6. Device, Signaling

Device signals door knocks, telephone rings. Various accessories make device adaptable for a variety of purposes. Accessories include pickup coil, magnetic microphone, Y-adapter, and 20-foot cable.

$50 (6/80)

Applied Communications Corporation

Telecaption Decoder

7. Decoder, Telecaption

Portable unit may be attached to any make or model television set. Decodes and displays closed-caption broadcasts for most network television programs.

$250 (7/80)

Sears, Roebuck & Company

Telecommunications Devices

8. Coupler, TTY

Several models available. Built-in telephone signaler transmitter. Used with old or new TTY printers. Unlimited recording of messages when using a local hardcopy terminal. Automatic answering system. Most advanced model enhanced with eight-bit microprocessor for ASC11 to Baudot (and vice versa) conversion. Coupler designed to communicate with deaf network system and any ASC11 terminal or home computer.

$170–$390 (6/80)

Applied Communications Corporation

9. Transmitter, Writing

Device enables person to receive and transmit written or drawn information over ordinary telephone. SEE no. 152 for further description.

$2,200–$3,000 (1/80)

Infolink Corporation
Talos System

10. TTYs and TTDs

Units allow communication over standard telephone line for hearing- or speech-impaired individuals. For two-way communication, a similar unit must be on the receiving end. Different models of these units, usually called TTYs or TTDs, suit different needs and interests. Variations include portable models small enough to fit into a large pocket or purse, panel message display, and memory storage. Printers usually available as a separate unit.

Price not available

American Communications Corporation
Automated Data Systems, Inc.
C-Phone, Inc.
Krown Research, Inc.
Specialized Systems, Inc.
Teletrym Corporation
Zygo Industries, Inc.

Telephone Accessories

11. Headsets

Modified headsets available for those with hearing loss.

Contact local telephone office for price

Bell Telephone Systems

12. Transducer, Light Signaling

Machine attaches to telephone with suction pads. Lights indicate dialing, ringing, and busy tone, and when receiver is picked up on the other end.

Price not available

Fashion Able
Petronics, B.U.

General Applications

Clocks

13. Clock, Alarm

Digital or standard clockface with silent, flashing light or vibrator alarm.

$33–$80 (1/80)

Alexander Graham Bell Association for the Deaf, Inc.
Nationwide Flashing Signals System

Signaling Devices

14. Alarm, Fire and Leak

Signals fire or leak of dangerous gases. Plugs into wall outlet. Receiver turns on light. Signal and receiver purchased separately. Useful for students working in a laboratory or other place where fires and gas leaks are potential problems.

Signal: $85; receiver: $95 (1/80)

Alexander Graham Bell Association for the Deaf, Inc.

Natural Sciences and Mathematics

Medical Equipment

15. Stethoscope, Amplifying

Stethoscope has microphone heads inserted in earphones to amplify heartbeats and sounds of circulatory and digestive systems.

Price not available

Sela Electronics Company

General Education

Library Equipment

16. Study Center, Multimedia

Desk unit can be equipped with adaptive devices for specific needs. SEE no. 140 for further description.

Price depends on specific order (1/80)

Gaylord Brothers, Inc.

II. Manipulation

Reading, Listening, or Viewing

Reading Aids

17. Bookholder

Stands equipped with swivels, spring-loaded levers, or loops to hold magazines or books in place at various angles. Some models can contract or expand; some can be folded flat. Available in wire or wood frames with plastic or metal surfaces. One model, particularly useful for reading while lying flat, has adjustable, stationary frame with clear, see-through plastic holder. Also sits on table or attaches to a frame for reading in a vertical position.

$2.50–$85 (1/80)

American Foundation for the Blind
Cleo Living Aids
Fred Sammons
G.E. Miller
John Kallender
Maddak, Inc.
National Association for Visually Handicapped
Worcester Manufacturing Company

18. Page Turner, Automatic

Holds any size book or magazine in convenient reading position and turns pages forward or backward in response to touch of a sensitive microswitch. Battery operated. Switch activated by pressure. Beneficial for individuals whose arms or hands are incapacitated. Can also be operated by breath or other controllable movements.

$285–$470 (1/80)

Cleo Living Aids
Fashion Able
G.E. Miller
J.A. Preston Corporation
Maddak, Inc.
Possum Controls Limited
Technical Aids to Independence, Inc.
WTB, Inc.

19. Page Turner, Manual

Curved plastic strip with foam rubber tip that flips pages. Wide curved rubber tip useful for turning large sheets. One lightweight turner has flat, heartshaped end with soft rubber pads for holding in mouth. Another type adjusts in length and can be held in hand or attached to arm or leg with a strap.

$4.50–$15 (1/80)

Fred Sammons
G.E. Miller
Maddak, Inc.

20. Reading Stand

Tabletop support for holding dictionaries, magazines, books, music sheets, or notes for presentations. Lip on stand holds materials. Angle adjustable both horizontally and vertically. Can be used to adjust page columns for those with tunnel vision. Knob for clamping onto table can be placed on right or left side. Used in a chair or wheelchair or at a table. Stands are helpful for those who have weak arm strength.

$65–$130 (1/80)

American Printing House for the Blind
Gaylord Brothers, Inc.
Maddak, Inc.

Writing or Speaking

Handwriting Aids

21. Arm Supports

Various types to support weak or shaky arms, including slings attached to a freestanding frame or to a frame attached to a wheelchair, as well as individual metal T-bars and curved metal supports with elbow pads.

$6–$695 (1/80)

G.E. Miller
Jaeco Orthopedic Specialties

22. Pen, "Seeing Eye"

Fiberoptic sensor in tip of pen enables it to "see" a pattern. Responds by emitting auditory signal. Available with headphones. Battery operated. Counter-recorder designed to work with pen records error and displays information visually. Auditory music converter permits pen to control radio or tape recorder. May be used for handwriting training.

$75–$125 (1/80)

G.E. Miller
Wayne Engineering Company, Special Education Division

23. Pencil Holder and Accessories

Holder used to guide pencil or pen across paper. Can be moved up or down for better control of pencil. Plastic loop with extension for gripping and vinyl triangular shapes that slide over pencil to provide a larger area for gripping also available. Plastic strap across back of hand has loop to hold pen. Pen included. Available for different size right or left hands.

$2–$11 (1/80)

G.E. Miller
Maddak, Inc.

24. Pencil Holder, Metal

Metal frame attaches to pen or pencil and rests on paper. Holds writing implement in correct position. Helps to make writing legible for individuals with poor fine motor skills. Converts for right- or left-hand use. Comes with specially designed pencil but any writing implement can be used.

$2.50 (1/80)

Zaner-Bloser

25. Pencil Holder, Wooden

Block of wood holds pencil or pen at angle. Individual rests hand on block and pushes it with arm, wrist, or hand to form letters. Helpful for weakened or poor grip.

$3–$3.50 (1/80)

Cleo Living Aids
Fashion Able

26. Wrist Holder, Magnetic

Consists of a writing panel and wrist magnet to hold paper steady. Magnet attached to adjustable wrist strap. Helps to eliminate uncontrolled arm motions for easier and more legible writing or drawing.

$20–$23 (1/80)

Fred Sammons
G.E. Miller
J.A. Preston Corporation

27. Writing Arm, Mechanical

Flexible arm that clamps to desk. Swinging arm motion simulates writing motion of hand, wrist, elbow, and shoulder. Used by gripping bar of arm with hand guard. Writing implement attached. Can be used with one or two hands. Designed for individuals with poor functional grasp, finger control, movement of arm/forearm, and/or uncontrolled movement of upper extremities.

$105–$215 (1/80)

G.E. Miller

28. Writing Board, Magnetic

Plastic-covered metal plate provides rigid surface for writing and drawing. Magnetic clamp holds edge of paper on right or left side. Magnetic ruler included.

$9–$13 (1/80)

G.E. Miller
Maddak, Inc.

Telephone Accessories

29. Telephone Handset Holder

Holds handset to free hands. Permanently attached to telephone handset. Line interrupters lever operated. Arms can be rigid or flexible.

$30–$75 (1/80)

American Printing House for the Blind
Fairway King
G.E. Miller
Maddak, Inc.
Sparr Telephone Arm Company

30. Telephone Pushbutton Adapter

Oversized, easy-to-read buttons for touch phones. SEE no. 182 for further description.

$7–$10 (6/80)

Cleo Living Aids
Difiglio Enterprises
G.E. Miller
Maddak, Inc.
Radio Shack

Typewriters, Modified

31. Typewriter Adapter, Morse Code, Breath-Operated

Operated by puffing or sipping on a tube. Puff creates a dot and sip a dash. When dot or dash is made, confirming beep is heard and flashing light seen. "U" automatically follows "q." Automatic shift to lower case letters follows upper case letter. Repeat mode for correcting errors, underscoring, and backspacing. Memory unit for words and phrases available at additional cost. Typewriter turned on and off by breath control.

$2,000 plus typewriter (1/80)

Technical Aids to Independence, Inc.

32. Typewriter Conversion System, Morse Code

Typewriter generates dots and dashes with single-switch operation. Morse code input then converted to page format text display on television screen. Dual-switch operation uses automatic code generator with one side of switch generating dots and the other dashes. User can store ten phrases of up to thirty characters for later access. Can also correct errors on television screen. Printer option available. Familiarity with code not necessary as tables of code are provided.

$770–$845 (1/80)

Prentke Romich Company

33. Typewriter Keyboard Mask

Auxiliary mask prevents persons with poor finger or hand control from tripping more than one key at a time. Flush or slightly above keys. Also supports hands so that desired hole can be found easily. Cover plate protects space bar to prevent unwanted character spacing but has opening for finger to operate bar when desired. Available only for Smith-Corona typewriters.

$30–$35 (1/80)

Fred Sammons
Smith-Corona/SCM Corporation

34. Typewriter Keyboard, Rearranged

Special key arrangement takes into account frequency of use of letters and letter combinations. Reduces finger stretching and travel. Helpful for individuals with arthritic pain in fingers and hands. Must be used with two hands. Pica or elite styles. Available only for SCM office typewriters.

Price not available

Smith-Corona/SCM Corporation

35. Typewriter, One-Handed

Typewriter specially designed for use by one-handed typists. Available in either right- or left-handed models. Frequently used keys concentrated in center of keyboard. Ribbon changer designed for use by one-handed persons. Available in both office-size and portable models. Optional attachments include extra-large shift key and typewriter keyboard shield. Large type available for visually impaired users.

$450–$520 (2/80)

Typewriting Institute for the Handicapped

General Applications

Carryalls

36. Carryall, Wheeled

Large tote carryall. Stands on four swivel casters. Folds to half size. Waterproof lining. Good for laundry, books, etc. Easy to pull.

$11 (1/80)

Fashion Able

Environmental Control Devices

37. Switching Device, Electrical

Unit or switch for operating electrical devices. SEE no. 68 for further description.

Price not available

Cleo Living Aids
Fashion Able
G.E. Miller
Maddak, Inc.
Petronics, B.U.
Possum Controls Limited
Prentke Romich Company
Romich, Beery & Bayer, Inc.
Zygo Industries, Inc.

Photocopiers

38. Copying Machine, Reprographic

Copiers modified to accommodate problems with gross and fine motor skills. Height can be adjusted for wheelchair users.

$9,000 (price varies depending on specific modifications) (1/80)

Gestetner Corporation

Reachers

39. Reachers

Helps individuals who have trouble grasping and holding pick up objects from floors and shelves. SEE no. 71 for further description.

$6–$60 (1/80)

Better Sleep Inc.
Fashion Able
Fred Sammons
G.E. Miller
Hallmark Orthopedic Specialties
International Business Machines
Jaeco Orthopedic Specialties
Maddak, Inc.
Mailhawk Manufacturing Company
Sears, Roebuck & Company

Recording Devices

40. Tape Recorder, One-Switch

Tape recorder with standard functions designed to be controlled with single switch. Can be wheelchair mounted. Accessories include specially designed lapboard model with remote display of recorder control panels. SEE no. 179 for further description.

$60–$360 (1/80)

American Foundation for the Blind
American Printing House for the Blind
Romich, Beery & Bayer, Inc.
Semantodontics of Phoenix
SFB Products

Recreation Equipment

41. Billiards Bridge, Customized

Pocket billiard guide is bridge with indentation for cue stick. Sits on pool table. Provides support for those with poor arm control.

$7.50 (1/80)

Taylor Enterprises, Inc.

42. Billiards Cue Attachment

Specially designed pool cue enables player to shoot billiards with independence whether one arm is used, player is shooting from a wheelchair, or other nonstandard playing pattern is used. Attaches to any standard cue.

$18 (1/80)

Charlton Manufacturing

43. Billiards Cue, Spring-Loaded

Useful for individuals with limited arm strength.

$45 (1/80)

Trinity Industries

Scissors

44. Scissors

Various modifications available, including special hand grips, spring-loaded opening action, and handles with a molded loop connecting them that stay open when slight pressure on handles is released. Left-handed and extra sharp scissors also available. Others designed to require only very light pressure to operate.

$6–$11 (1/80)

Fashion Able
Fred Sammons
G.E. Miller
Ja-Son Company
Maddak, Inc.
Roslyn Equipment Company

Signaling Devices

45. Call Signal, Breath-Operated

Standard telephone-type plug-in pickup. Cord attached to housing containing switch, which is activated by breathing into a mouthpiece.

$60 (1/80)

Maddak, Inc.
Roslyn Equipment Company

Telephone Accessories

46. Telephone Handset Holder, Spring-Action

Strap wraps around phone handset to hold spring-action clip, which is anchored to phone to grasp the hand. Useful for individuals who have trouble grasping and holding.

$5–$6 (1/80)

G.E. Miller
Maddak, Inc.

Fine Arts and Crafts

Drawing and Drafting Equipment

47. Wrist Holder, Magnetic

Panel with magnet attached to wrist strap to control arm motions. SEE no. 26 for further description.

$20–$23 (1/80)

Fred Sammons
G.E. Miller
J.A. Preston Corporation

Looms

48. Loom, One-Handed

Multiharness hand looms operable with one hand. Patterns can be programmed into the loom with control cylinder.

$250–$490 (12/79)

NASCO

Music Equipment

49. Slide Rule, Chord

Handheld device simulates fingerboard of fretted instrument. Chords can be restructured to suit specific instruments. Used with right or left hand. Helps to convert finger patterns to musical symbols and vice versa. Minimal knowledge of music required for use. Helps visualization of spatial relationships.

Not manufactured commercially

Joseph F. Matyas

Needlework Aids

50. Needlework Aids

Clamp-on hoop holds needlework. Hoop attachment tilts in any direction and adjusts in height. Clamp fits on table, chair, lapboard, etc. Only one hand needed to sew.

$12–$25 (1/80)

Fashion Able
Maddak, Inc.
Roslyn Equipment Company

Potter's Wheels

51. Potter's Wheel, Hand- or Foot-Controlled

Hand lever or foot pedal controls variable speeds. Can be used with right or left hand. SEE no. 87 for further description.

$750–$850 (10/79)

AMACO
G.E. Miller

Physical Education, Athletics, and Recreation

Basketball Equipment

52. Basketball Hoop and Return Net, Oversized

Oversized basketball hoop and return net make scoring and retrieval of ball less frustrating. SEE no. 89 for further description.

$125–$660 (1/80)

Flaghouse
Jayfro Corporation
Maddak, Inc.

Bowling Equipment

53. Bowling Ball, Handle-Grip

Spring-loaded handle allows regulation-sized ball to be used by individuals who have difficulty with usual finger grip. Individual grasps handle on ball to roll it; handle retracts when ball is released.

$80–$95 (1/80)

George H. Snyder
Hammatt & Sons
Maddak, Inc.
Snitz Manufacturing Company

54. Bowling Ball Push Pole

Extension pole with prongs to push ball down lane. Useful for those unable to grasp or hold ball by holes. SEE no. 91 for further description.

$50 (1/80)

Maddak, Inc.

55. Bowling Ramp

Ramp provides direction for rolling ball. Useful for those unable to use finger holes or with poor control of arms. SEE no. 93 for further description.

$13–$105 (1/80)

George H. Snyder
Hammatt & Sons
Maddak, Inc.
Snitz Manufacturing Company

Exercise Equipment

56. Wrist Exerciser, Silicone

Silicone material to exercise hand and wrist.

$2–$3 for 2 oz.; $4.50 for 5 lb. (1/80)

Cleo Living Aids
Maddak, Inc.
Thera-Plast Company, Inc.

General Education

Computer Hardware and Accessories

57. Microcomputer, Customized

Microcomputer with customized data entry hardware. Device can be controlled by mechanical, touch sensitive, or breath-operated switches with magnetic or optical sensors. Keyboard available for those with good motor ability. Uses program cartridges. Can respond to information or play games such as Concentration or Mastermind. Program cartridges under development include communication with other users, communication with central computer via telephone lines, teaching computer programming, and melodic composition. Printer and/or voice option available.

Price not available

Educational Microcomputer Systems, Inc.

Environmental Control Devices

58. Switch, Modified Electrical

Unit or switch modified for specific manipulation difficulties operates electrical devices. Useful in operating classroom audiovisual equipment. SEE no. 68 for further description.

Price not available

Cleo Living Aids
Fashion Able
G.E. Miller
Maddak, Inc.
Petronics, B.U.
Possum Controls Limited
Prentke Romich Company
Romich, Beery & Bayer, Inc.
Zygo Industries, Inc.

Reading Aids

59. Paper Holder

Hangs large sheets of paper such as blueprints or newspapers for easier viewing. No hands needed to hold up sheets. SEE no. 115 for further description.

$2.50–$75 (1/80)

Evans Products, Inc.
Fairway King

Tools

60. Pliers, Self-Opening

Pliers with molded plastic strap attached to handles. Strap forces handles open when slight squeeze is released.

$13 (1/80)

Maddak, Inc.

Typewriters, Modified

61. Text Processor System, CRT

Text processor unit attaches to typewriter system. Unit can compose text for display on television screen, edit, correct, and store words, phrases, and graphic symbols. May also be used to play television games. All units can be operated with a variety of input interfaces and be added to a typewriter system that meets individual needs.

Price not available

Possum Controls Limited

62. Typewriter Control System, Electronic

Typewriter input modifications allow typewriter to be used by people with a variety of disabilities. Ability to operate typewriter depends upon individual's controllable movements. Input modes include board-mounted wobble sticks, foot controls, chin switches, or plate switches. Typing may be controlled with one or two such switches, or with a stylus-operated minikeyboard or an expanded keyboard. May also be equipped with "overdeck conversions," which provide an enlarged display of keyboard. Conversions can be added to conventional machines. Stationary continuous printers available.

Price not available

Possum Controls Limited

III. Mobility

Writing or Speaking

Telephone Accessories

63. Communicator, Classroom

Two-way classroom communicator ("tele-class service") that enables homebound student to participate in classwork. Student uses telephone headset and teacher uses speaker phone. Portable conference phone amplifies two-way communication between the student at home and the class.

Contact local telephone office for price

Bell Telephone Systems

General Applications

Carryalls

64. Carryall, Castered

Large tote bag on swivel casters. Folds to half size. Waterproof for outdoor use. Useful for carrying books, laundry, etc.

$11 (1/80)

Fashion Able

65. Carryall, Wheelchair-Mounted

Various sized vinyl or denim pouches to attach to arms or back of wheelchair. Carrying bag available for walkers.

$2–$30 (1/80)

Fred Sammons
G.E. Miller
Maddak, Inc.
Sears, Roebuck & Company
Ventura Research & Rehabilitation for Handicapped, Inc.
Vocational Guidance and Rehabilitation Services

66. Trays

Plastic tray for walkers or wheelchairs. Requires one vertical bar to rest on. Holds cups, glasses, files, books, charts, etc. Special metal attachment holds luggage on the back of wheelchair. Another type carries holder for crutch or cane on back.

$8–$27 (1/80)

Fashion Able
Gendron, Inc.
Raymo Products, Inc.
Vocational Guidance and Rehabilitation Services

Clothing

67. Clothing, Customized

Various clothing styles adapted for specific impairments and activities. Custom work done according to specifications.

Prices depend on specific order

Vocational Guidance and Rehabilitation Services

Environmental Control Devices

68. Remote Control Device, Multichannel

Multichannel control provides those with mobility or manipulative impairments the capability for remote control of electrical and electronic devices. Can be used to operate telephones, tape recorders, television sets, etc. System can be operated by a stick that moves in several directions, chin, speech, tongue, foot, knee, breath, shoulder, or head. Can be linked to an electric wheelchair control system and adapted for special applications such as page turners, computer interfaces, microfilm readers, etc. Able to operate up to nine devices simultaneously.

Price not available

Cleo Living Aids
Fashion Able
G.E. Miller
Maddak, Inc.
Petronics, B.U.
Possum Controls Limited
Prentke Romich Company
Romich, Beery & Bayer, Inc.
Zygo Industries, Inc.

Photocopiers

69. Copying Machine, Reprographic

Copiers modified to accommodate various impairments. SEE no. 38 for further description.

$9,000 (price varies depending on specific modifications) (1/80)

Gestetner Corporation

Racks

70. Rack, Crutch and Cane

Space-saving wall-mounted unit (17 inches by 60 inches) to store canes and crutches. Wood with steel hangers. Appearance similar to a hat rack.

$100 (1/80)

G.E. Miller

Reachers

71. Reachers

Extensions ranging from 21 to 32 inches that allow individuals to reach for objects of various sizes. Some designed specifically for small or large objects. Various grips available: soft rubber, fingerlike grips; trigger grip with swivel head and forearm extension; squeeze-type handle; toggle lever to lock the reacher for people unable to work a trigger handle. Some models include magnets or projections near the end for pulling objects forward; others scoop up objects that are out of reach. Folding models available.

$6–$60 (1/80)

Better Sleep Inc.
Fashion Able
Fred Sammons
G.E. Miller
Hallmark Orthopedic Specialties
International Business Machines
Jaeco Orthopedic Specialties
Maddak, Inc.
Mailhawk Manufacturing Company
Sears, Roebuck & Company

Scales for Wheelchair Users

72. Scale Adaption Device

Metal wheelchair tracking channels to position over scales. User rolls wheelchair onto channels, checks weight, and then subtracts weight of wheelchair.

$50 (1/80)

Nelson Medical Products Company

73. Scales, Platform

Portable platform that does not require permanent installation. Individual determines weight of object by subtracting predetermined weight of chair.

$550 (1/80)

G.E. Miller

74. Scales, Suspension

Scales have beam arm for swing seat. Also available with metric measurements. Chrome lifter attachment has adjustable base with canvas seat attached by chains. Person is guided into seat from wheelchair and cranked up to clear chair. Other types of lifters available. Lifters and scales ordered separately.

Scales: $265; lifter: $545–$650 (1/80)

Ted Hoyer & Company, Inc.

Seating

75. Seat, Rising

Cushioned device to assist in rising from a chair. Helpful for those with arthritic impairments. Two or three coil springs built into hinge operated by two levers placed near the rear of seat. Seat rises to about 45 degrees. Special seats available for heavier persons.

$135–$150 (1/80)

Maddak, Inc.

76. Seating, Customized

Modification of desks, tables, and chairs to accommodate special needs.

Price depends on modifications

Heywood Wakefield Company, Public Seating Division

Tables and Desks

77. Table, Revolving Game

Ballbearing-mounted turntable allows game table to revolve in either direction. Table height adjusts from 27 to 36 inches. Designed for play from wheelchairs.

$75 (12/79)

Worldwide Games

78. Table, Stand-In

Tables designed with cutouts, parallel grab bars, knee supports, and inclined, rubber-matted platform to allow people with mobility impairments to work standing up. Some models equipped with hydraulic or electric mechanisms to raise and lower work surface. Various models and features available, including tables for one to four people and power-driven mobile models. Powered models may be equipped with single-level control module. Optional levers for non-powered tables automatically hoist individual out of wheelchair.

$225–$1,205 (1/80)

Activeaid, Inc.
Fairway King
G.E. Miller
J.A. Preston Corporation

79. Table, Stand-In, Sling-Equipped

Table provided with padded, adjustable hip harness that supports chest and back. Harness is placed around the person in the wheelchair, who is lifted to a standing position by manually or electrically turning gear crank. Support locks in standing position.

$895–$1,200 (9/79)

G.E. Miller
Laberne Manufacturing Company

80. Table, Work

Height adjustable from 27 to 37 inches with electric or hydraulic mechanisms. One model has lapboard that lowers for wheelchair users rather than adjustable height. Some tables have cutouts; others have specially protected surfaces. Largest table accommodates up to six wheelchairs.

$190–$1,200 (1/80)

Bailey Manufacturing Company
Brodhead & Garrett
G.E. Miller
Hausmann Industries
Laberne Manufacturing Company
Maddak, Inc.

Wheelchairs

81. Wheelchair, Elevating

Wheelchair adjustable to various heights. Electrically or manually operated. Footrest pulls in for easier frontal access. Chair mobile at any level.

Price not available

Scat Electric Elevating Chair
Summit Services

Fine Arts and Crafts

Drawing and Drafting Equipment

82. Drafting Table, Tilt-Top

Although not specifically designed for handicapped users, 30-inch-high table has several accommodating features. Adjustable tilting top. Rigid legs support frame at rear of desk with no crossbeam.

$170 (1/80)

Brodhead & Garrett

83. Easels

Various models available, including portable desk models, chart easels, and telescoping metal easels that are adjustable for table or floor use. Floor models have metal hand cranks to raise or lower canvas height. Some models collapsible and fold flat.

$3.50–$225 (1/80)

Brodhead & Garrett
Charles Mayer Studios, Inc.
Eberhard Faber, Inc.
Maddak, Inc.

84. Tracing Board, Portable

Portable tracing board that fits on lap or table. Equipped with two movable fluorescent lamps, switch, and extra long cord. Baked white enamel reflecting surface. Can be used flat or at an incline. Equipped with rubber feet.

$95–$495 (1/80)

Brodhead & Garrett

Looms

85. Loom, Floor

Four-harness, 40-inch rigid jack loom to accommodate a variety of physical handicaps, including individuals in wheelchairs and arm cranes. Pawls, gears, handles, bolts, and small metal plates are electroplated. Accessories available. Looms available with regular, sectional, or prewound beams.

$825–$1,165 (1/80)

Bailey Manufacturing Company
Fairway King
NASCO

86. Loom, Table

Various models available, including four-harness model with harness levers operated by either hand and model operated by side levers. Joints dadoed or mortised on a table. Rubber pads on bottoms of legs prevent slipping. Accessories available. Prices vary depending on number of harnesses, type of heddle, and size. Hands needed only to operate shuttle. Portable macrame loom also available.

$25–$1,200 (1/80)

Brodhead & Garrett
Fetty-Nielsen
G.E. Miller
Leclerc Corporation

Potter's Wheels

87. Potter's Wheel, Hand- or Foot-Operated

Height of throwing head adjustable from 19½ to 34 inches. Unit rolls on casters and can fit through standard door. Hand lever or foot pedal can control variable speeds. Operates clockwise or counterclockwise for left- or right-handed throwers.

$750–$850 (10/79)

AMACO
G.E. Miller

Natural Sciences and Mathematics

Tables and Desks

88. Table, Laboratory

Adjustable stainless steel table can be used by standing or sitting individual. Plugs into any 110–120 V outlet. Has no-power key lock to prevent unauthorized use. Can be made with cut-out on the right, left, or both sides. Has adjustable tilt top. One-inch lip prevents spills.

$2,400 (4/80)

Roslyn Equipment Company

Physical Education, Athletics, and Recreation

Basketball Equipment

89. Basketball Hoop and Return Net, Oversized

Height-adjustable basketball backboard with return net to catch ball after each shot and return it to player. Return net mounted on adjustable legs. Oversized hoops with or without return nets also available. Devices make game less frustrating for those with visual and manipulation problems and those in wheelchairs.

$125–$660 (1/80)

Flaghouse
Jayfro Corporation
Maddak, Inc.

Bowling Equipment

90. Bowling Ball, Handle-Grip

Provides retractable handle from ball. Helps bowler to roll ball from side of chair. SEE no. 53 for further description.

$80–$95 (1/80)

George H. Snyder
Hammatt & Sons
Maddak, Inc.
Snitz Manufacturing Company

91. Bowling Ball Push Pole

Long-handled device with prongs to push and guide ball down lane. Extensible handle. Can be used from wheelchair or standing position. Also useful for those unable to grasp or hold ball by holes.

$50 (1/80)

Maddak, Inc.

92. Bowling Rails

Banister provides support for person bringing ball to foul line. SEE no. 265 for further description.

$40–$55 (1/80)

American Foundation for the Blind

93. Bowling Ramp

Chrome-plated steel ramp attaches to wheelchair. Individual places ball on ramp and pushes it slightly from rear or side; ball should roll down alley. Can be used by sitting or standing individual. Also helpful for bowlers with weak arms.

$13–$105 (1/80)

George H. Snyder
Hammatt & Sons
Maddak, Inc.
Snitz Manufacturing Company

94. Bowling Ramp, Center-Mounted

For wheelchairs. Straight aluminum bar juts from side across lap. Bowler can wheel closer to foul line using both hands. Grip attachment can be used on most wheelchairs without nuts or bolts.

$35 (1/80)

Snitz Manufacturing Company

Exercise Equipment

95. Balance Beam

Low-level balance beam with attached hand rail for use by people with ambulatory and/or manipulation impairments.

$270–$310 (1/80)

Jayfro Corporation
Maddak, Inc.

96. Bicycle Exerciser

Bicycle exerciser that attaches to tubular frames of beds or wheelchairs, or to a leisure chair.

Price not available

Dakon Corporation

97. Bicycle Exerciser, Wheelchair

Bicycle exerciser for legs. Attaches to chair, wheelchair, or bed frame. Adjustable resistance mechanism. Adjusts to leg length. Accessories include hand supports, bed attachments, and leg braces. With hand supports or extension arms, shoulders can be exercised. Home model is not adjustable and cannot be used with accessories.

$130–$325 (1/80)

Fashion Able
G.E. Miller
Maddak, Inc.

98. Exercise Center, Wheelchair

Multipurpose exercise center specially designed to accommodate wheelchair-bound users. Can be used to provide active, resistive, or assistive exercise for all major muscles. Model for ambulatory users equipped with a chair. Wheelchair model allows exercises to be done from the wheelchair.

$1,680–$3,250 (11/79)

G.E. Miller
Hausmann Industries

99. Ladder, Foot Placement

Aluminum platform in a ladder arrangement. Bars are adjustable straps. Develops eye-foot coordination for persons with ambulatory impairments.

$110–$155 (1/80)

Fairway King
G.E. Miller
Hausmann Industries
Jayfro Corporation
Snitz Manufacturing Company

100. Parallel Bars

Various models available, some can be custom built. Some models have folding bars for storage. Height and width can be adjusted. Available in different lengths. One model is portable; others can be mounted to wall, floor, or platform. Some bars require adjustment by only one person; some can be adjusted from a wheelchair. Bars adjusted by hand crank or electrical power.

$250–$2,195 (9/79)

Activeaid
G.E. Miller
Laberne Manufacturing Company

101. Weightlifting System, Wheelchair

Suspended, pulley-mounted weights with handles at chest and floor levels for people in wheelchairs. "Triplex" model includes overhead handle as well.

$410–$595 (11/79)

Hausmann Industries

102. Weights, "Sandbag"

Wrist and ankle cuff (saddle-type) weights with individual pockets filled with tiny metal pellets. Color coded to indicate different weights.

$4–$20 (1/80)

G.E. Miller
Hausmann Industries
Maddak, Inc.

Recreation Equipment

103. Pool Lift

Socket or mounted lift unit without ramps. Lever operated. Can be stored when not in use. Easily transferred to other locations. Automatic braking system. Wheelchair unit available that allows disabled individual to be transferred from locker room to lift chair. Stretcher support attachment available. Can be designed for specific needs.

$530–$8,570 (9/79)

Jennings Park, Playground, and School Equipment
Ted Hoyer & Company, Inc.

104. Skating Support, Wheeled

Light tubular metal frame supports individual while roller or ice skating. Collapsible for storage. Will not tip over. Available with wheels.

Price not available

Hein-a-Ken Corporation

Wheelchairs

105. Wheelchairs for Sports

Designed specifically for sports and athletics. Double back posts with choice of wheel locations. Two sets of casters with antiflutter caster bearings. Safety roller bar across front of foot plates. Sloped and detachable wrap-around, full-length, or desk arms. Arm locks front and rear. Also features rear antitipping roller attachment, heel loops, and calf straps. Treaded tires. Available in various widths.

$750 (1/80)

G.E. Miller

General Education

Computer Hardware and Accessories

106. Microcomputer, Customized

Microcomputer device with program memory cartridges. Useful for those who have to learn at home. SEE no. 57 for further description.

Price not available

Educational Microcomputer Systems, Inc.

Computer Programs

107. Computer Program, Talking

Audio response system is computer service that responds with speech. Available in three models ranging from small vocabulary, audio configuration for single computer to large distributed audio system with packet switching and remote terminal support system. Creation, storage, and modification of vocabulary controlled by user. System components consist of communications processor and host interface. Useful for home studies.

Price not available

ASI Teleprocessing

Desk and Trays

108. Desks and Trays, Wheelchair

Plastic or wood trays that slip over wheelchair arms to provide a desktop surface for reading or writing. Usually available with rims. Various features available, including adjustable angle, hinged overlay sheet with fold-away bars to support notebooks or books at an angle, and storage compartments. Some models can be used as carrying cases as well as desks. Wheelchair can be hand-propelled with tray in place. Other types that rest on user's lap also available; usually less expensive.

Lap trays: $8–$20; wheelchair-mounted trays: $23–$100 (1/80)

Cleo Living Aids
Fashion Able
Fred Sammons
G.E. Miller
George H. Snyder
Hausmann Industries
Maddak, Inc.
Nystrom Company
Raymo Products, Inc.
Sears, Roebuck & Company

Drawing and Drafting Equipment

109. Easel, Tabletop

Useful for holding charts and tables for presentations or for better use of desktop space.

Price not available

Charles Mayer Studios, Inc.

Environmental Control Devices

110. Switching Device, Electrical

Unit or switch for operating electrical devices. Useful for operating classroom audiovisual equipment. SEE no. 68 for further description.

Price not available

Cleo Living Aids
Fashion Able
G.E. Miller
Maddak, Inc.
Petronics, B.U.
Possum Controls Limited
Prentke Romich Company
Romich, Beery & Bayer, Inc.
Zygo Industries, Inc.

Handwriting Aids

111. Writing Board, Magnetic

Provides rigid surface for writing and drawing. SEE no. 28 for further description.

$9–$13 (1/80)

G.E. Miller
Maddak, Inc.

Household Devices

112. Household Aids

Specially designed items such as bowl holders, under-counter jar openers, one-handed can openers, needle threaders, lamp switch extension levers, over-stove mirrors, pull loops (flexible nylon loops to attach to drawers, zippers, handles, etc.).

$1–$13 (1/80)

Cleo Living Aids
Fashion Able
Fred Sammons
G.E. Miller
Maddak, Inc.

Library Equipment

113. Display Stand, Library

Stands adaptable for wheelchair users. Height adjustable from 50 to 60 inches. Holds newspapers, paperbacks, cassettes, records, and periodicals. Revolves for easier viewing.

$285–$1,100 (1/80)

Gaylord Brothers, Inc.

114. Study Carrel

Woodgrain unit has adjustable chrome legs and is accessible to wheelchair users. Reading stand adjustable from a flat surface to a 60-degree angle. Room for audiovisual equipment on right and left. Own power outlets. Available with tube lighting. Accessories available to make carrel useful for wheelchair users with other impairments.

$540–$700 (1/80)

Gaylord Brothers, Inc.

Reading Aids

115. Paper Holders

Strips of metal mounted on wall grip papers, blueprints, etc. Large papers require several holders. Rollers hold papers, which are released with gentle pulling. Each holder is 6–12 inches long. Attached to wall by screws, adhesive backing, or magnetic stripping. Another holder particularly useful for newspapers is a frame that stands on the floor with two vertical columns, a crossbeam, and three large clips. Height adjustable.

$2.50–$75 (1/80)

Evans Products, Inc.
Fairway King

116. Reading Stand

Adjustable for floor or table use. Helpful for presentations or to increase desk space. SEE no. 20 for further description.

$65–$130 (1/80)

American Printing House for the Blind
Gaylord Brothers, Inc.
Maddak, Inc.

Tables and Desks

117. Desk, Accessible

Tilting or nontilting top usually mounted on two legs. Height adjustable but special heights can sometimes be ordered. Most models have a retaining bar to keep books and papers in place. One model has an attachable section to support spastic arms, a magnetic desktop, and a footrest. Some desks have offset cutouts for closer access.

$200–$680 (1/80)

Bailey Manufacturing Company
G.E. Miller
Maddak, Inc.

118. Lectern, Portable

Sits on top of table or desk. Fourteen inches high with reading surface edged by recessed lip. Includes self-contained briefcase made of heavy duty leatherette with plastic handle and snap fasteners. Fluorescent fixture included. Helpful for class presentations.

$70 (1/80)

Charles Mayer Studios, Inc.

Telecommunications Devices

119. Graphics Transmitter, Telephone

Provides real-time, interactive audiographics over the telephone. Telescreen receiver projects an enlarged image of graphics being sent onto a wall screen for group viewing. Device allows for simultaneous voice communication. Optional voice amplification capability available.

$3,500–$4,200 (1/80)

Talos System

Reading, Listening, or Viewing

Communicators, Electronic

120. Communicator, Braille

Portable device with keyboard on one side and multi-celled display on reverse. Manipulating keyboard produces braille letters and contractions on display. Allows communication by deaf-blind person with knowledge of braille.

$325 (Fall 1979)

American Foundation for the Blind

Magnifiers

121. Magnifier, Panoramic

Large lens mounted on stands or swinging arms. No hands needed to hold lens in position. SEE no. 166 for further description.

Price not available

Ednalite Corporation
Gaylord Brothers, Inc.

122. Magnifier, Stand-Mounted

Various magnifiers mounted so that hands are unnecessary. SEE no. 165 for further description.

$2–$135 (1/80)

Dazor Manufacturing Corporation
Fashion Able
Foley Manufacturing Company
Low Vision Rehabilitation Service, Saint Barnabas Center
Phillip Barton Vision Systems, Inc.
SFB Products

Writing or Speaking

Braillewriters

123. Braillewriter, One-Handed Manual

Braillewriter with optional key extensions to allow one-handed operation. SEE no. 193 for further description.

$175 (1/80)

American Printing House for the Blind

Communicators, Electronic

124. Communication Board, Talking

Microcomputer units that provide spoken words or messages for those without speech. Various modes of operation available, including breath, treadle, and deflector.

$200–$1,900 (1/80)

J.A. Preston Corporation
Possum Controls Limited
Sci-Tronics, Inc.
Telesensory Systems
Zygo Industries, Inc.

125. Communicator, Print Display

Communicators that provide messages on paper tape or display. Various switches can be adapted to operate unit. SEE no. 145 for further description.

Price not available

Prentke Romich Company
Thorn Automation, B.U.

126. Synthesizer, Voice

Intraoral artificial larynx, which does not require the use of hands. SEE no. 148 for further description.

$65–$415 (3/80)

A.R. Mann
Luminaud Inc.

Computer Hardware and Accessories

127. Computer Printer-Receiver, Braille

Portable receiver that prints braille on tape from computer or other coded data source. SEE no. 196 for further description.

Price not available

Triformation Systems, Inc.

Sound Source, Portable

128. Tone Emitter

Unit with various switches that nonverbal person with manipulation impairments can use to attract attention. SEE no. 150 for further description.

$120 (1/80)

Prentke Romich Company

Typewriters, Modified

129. Typewriter Control System, Electronic

Control systems that allow operation of typewriters by individuals with a variety of impairments. Wide range of input switches can be matched to a typewriter system depending upon individual's specific disability. SEE no. 62 for further description.

Price not available

Possum Controls Limited

130. Typewriter, Large-Type, Customized Keyboard

Typewriter with continuous feed paper attachment, cushioned arm rest, and elevated keyboard mask for individuals with spastic movements or tremors. SEE no. 206 for further description.

$365–$395 (2/80)

Olympia USA, Inc.
Smith-Corona/SCM Corporation
Typewriting Institute for the Handicapped

131. Typewriter, One-Handed

Right- or left-handed typewriter. Large type element available. SEE no. 35 for further description.

$450–$520 (2/80)

Typewriting Institute for the Handicapped

General Applications

Environmental Control Devices

132. Switching Device, Electrical

Unit or switch that operates electrical devices. SEE no. 68 for further description.

Price not available

Cleo Living Aids
Fashion Able
G.E. Miller
Maddak, Inc.
Petronics, B.U.
Possum Controls Limited
Prentke Romich Company
Romich, Beery & Bayer, Inc.
Zygo Industries, Inc.

Orientation Aids

133. Guidance System, Sonar

Environmental sensor that detects objects by vibrations. Useful for deaf/blind individuals. SEE no. 217 for further description.

Price not available

Telesensory Systems

Photocopiers

134. Copying Machine, Reprographic

Special modifications to machines for specific needs. SEE no. 38 for further description.

$9,000 (price varies depending on specific modifications) (1/80)

Gestetner Corporation

Signaling Devices

135. Alarm, Visual

Flashing light signals presence of fire or leak of dangerous gases. Helpful for those with olfactory problems or any student working in a laboratory or place where gas leaks and fires are potential problems. SEE no. 14 for further description.

Signal: $85; receiver: $95 (1/80)

Alexander Graham Bell Association for the Deaf, Inc.

Fine Arts and Crafts

Looms

136. Loom, Floor

Four-harness loom designed to accommodate various physical handicaps. SEE no. 85 for further description.

$825–$1,165 (1/80)

Bailey Manufacturing Company
Fairway King
NASCO

Potter's Wheels

137. Potter's Wheel, Hand- or Foot-Operated

Height adjustable. Operated by foot pedal or hand lever. Can be used with either right or left hand. SEE no. 87 for further description.

$750–$850 (10/79)

AMACO
G.E. Miller

General Education

Computer Hardware and Accessories

138. Microcomputer, Customized

Microcomputer device with program memory cartridges. Various actuators available, including optical sensors, breath-controlled switches, or magnetic switches. SEE no. 57 for further description.

Price not available

Educational Microcomputer Systems, Inc.

Environmental Control Devices

139. Switching Device, Electrical

Unit or switch that operates electrical devices. Useful in operating classroom audiovisual equipment. SEE no. 68 for further description.

Price not available

Cleo Living Aids
Fashion Able
G.E. Miller
Maddak, Inc.
Petronics, B.U.
Possum Controls Limited
Prentke Romich Company
Romich, Beery & Bayer, Inc.
Zygo Industries, Inc.

Library Equipment

140. Study Center, Multimedia

Convenient wraparound desk unit with work space, television monitor, and camera that monitors and magnifies. Optional equipment available, including swing-out end panel for wheelchair access, variable speech audio player, computer terminal, audio amplifier, and alarm system. Useful for individuals with hearing, speech, or vision impairments.

Prices depend on specific order (1/80)

Gaylord Brothers, Inc.

Typewriters, Modified

141. Text Processor System, CRT

Text processor unit that can be added to a typewriter system to meet specific needs. Operated by a variety of input switches. SEE no. 61 for further description.

Price not available

Possum Controls Limited

V. Speech

Writing or Speaking

Amplifiers

142. Amplifier, Telephone

Telephone handset drops into cradle that amplifies incoming and outgoing voice signals. Adjustable volume. Battery operated. Another type placed on telephone receiver can be carried in pocket or purse. Both can be used with or without hearing aid. Similar to devices available in electronics or stereo shops.

$23–$28 (1/80)

Alexander Graham Bell Association for the Deaf, Inc.
G.E. Miller
Maddak, Inc.

143. Public Address System, Individual

Portable, lightweight amplification systems for indoor or outdoor use. Battery operated.

$110–$150 (1/80)

Audiophonics Corporation
Luminaud Inc.

Communicators, Electronic

144. Communication Board, Computerized

Microcomputer units that provide spoken words or messages for those without speech. Devices usually consist of a unit with squares representing words or phrases. Communicators can usually be programmed and modified for specific vocabularies. Sizes range from 100-square to portable 8-square model. Can be operated by pointer or modified switch. One unit has numberboard and touch switch in addition to wordboard. Numerical keyboard similar to a calculator available for the visually impaired. Breath or any other controlled movement can be used to operate switches.

$200–$1,890 (1/80)

J.A. Preston Corporation
Possum Controls Limited
Sci-Tronics, Inc.
Telesensory Systems
Zygo Industries, Inc.

145. Communicator, Print Display

Communicators that provide messages on paper tape. Different models available. One type has letters and symbols keyed into a device on a keyboard similar to that on a typewriter. Braille guide to key locations available for visually impaired. Message communicated through lighted video display as well as page or strip printer. Controllable by various switches for manipulative impairments. Battery operated.

Price not available

Prentke Romich Company
Thorn Automation, B.U.

146. Computer Terminal, Talking

Solid-state interface unit that produces speech. Can be adapted to most computer and communication systems. SEE no. 157 for further description.

Price not available

Votrax: Division of Federal Screw Works

147. Speech Display System, Spectrographic

Visible speech display that instantly shows broad-band spectrograms on a television screen. Speech recorded with a microphone, after which complete acoustical representation appears. Two video spectrograms available. Unit can "freeze" speech pattern. Good for speech training and foreign language instruction.

$10,250 (4/80)

Spectraphonics, Inc.

148. Synthesizer, Voice

Intraoral artificial larynx. Electronic circuitry and batteries contained in pocket-sized unit. Plastic tubing from unit placed in mouth to pick up sound and air vibrations. Push-button tone generator starts and stops to provide phrasing. Adjustable controls for volume and pitch. Amplifier attached to shirt pocket. Model available that does not require hands. Tube attaches to glasses or headband with a clip. Filter device for users who have difficulty with saliva, beverages, or food.

$65–$415 (3/80)

A.R. Mann
Luminaud Inc.

149. Talking Communicator, Portable

Handheld electronic device that produces verbal output. Controlled by keyboard. Speech output based on prestored sounds, words, and phrases that can be combined into sentences. Sounds can be recalled and/or repeated. Battery operated.

Price not available

HC Electronics

Sound Source, Portable

150. Tone Emitter

Handheld, battery-operated device that emits a tone to attract attention. Emits signal to initiate a conversation or to make presence known. Volume and pitch adjustable. Usable with any type of control switch.

$120 (1/80)

Prentke Romich Company

Telecommunications Devices

151. Coupler, TTY

SEE no. 8 for description.

$170–$390 (6/80)

Applied Communications Corporation

152. Transmitter, Writing

Device that enables transmission and reception of written or drawn information over an ordinary telephone or by direct wire connection. Writing is done with ball-point pen, eliminating need for ink supply and making device easily portable. Real-time communication. Various models available for specific needs. Custom form design available. Useful for people with hearing and speech impairments.

$2,200–$3,000 (1/80)

Infolink Corporation
Talos System

153. TTYs and TTDs

Telephone communication devices for those with hearing and speech impairments. Can also be used for face-to-face communication. SEE no. 10 for further description.

Price not available

American Communications Corporation
Automated Data Systems, Inc.
C-Phone, Inc.
Krown Research, Inc.
Specialized Systems, Inc.
Teletrym Corporation
Zygo Industries, Inc.

General Education

Library Equipment

154. Study Center, Multimedia

Desk unit that can be equipped with adaptive devices for specific needs. SEE no. 140 for further description.

Prices depend on specific order (1/80)

Gaylord Brothers, Inc.

Reading, Listening, or Viewing

Computer Hardware and Accessories

155. Cartridge, Braille Printer

Interchangeable cartridge for computer printer that produces legible braille. Consists of metal comb with raised dots on teeth, which fits across print hammers. Another cartridge containing indentations corresponds to dots on comb. Front embossed to eliminate mirror image.

Price not available

International Business Machines

156. Computer Terminal, Braille

Self-contained terminal and printer whose applications range from programming to investment management. Keyboard terminal with braille printer. Accepts braille data from a computer, magnetic tape, keyboard, or any other coded source. Can also be used as a braillewriter. One model has carrying case.

Price not available

Triformation Systems, Inc.

157. Computer Terminal, Talking

Solid-state interface unit that produces high quality electronically synthesized human speech with inflection from low-speed digital input. Unlimited vocabulary. One model has capability for several languages. Adjustable voice speed. Compatible with most conventional computer and communication systems. Can be used in a variety of applications.

Price not available

Votrax: Division of Federal Screw Works

158. Information Processor, Braille, Paperless

Personal information system for individuals who use braille. Stores braille and audio input on standard cassettes. Information can also be edited, indexed, and retrieved. Has display panel. Can produce braille with electronic braille keyboard added.

Price not available

Telesensory Systems

159. Information System, Braille

Total storage and output system of information in braille, spoken language, or both. Reads braille books transcribed on magnetic tapes, writes braille. Can use commercial tapes. Stores about 700 pages of braille. Compact system consists of electronic cassette deck, built-in braille display, electronic braille keyboard, and central microprocessor. Modular hardware design. Custom digital braille cassettes such as dictionaries available.

$7,600 (6/80)

Papenmeier Corporation

160. Reader-Terminal

Kurzweil Reading Machine ™, which can also be used as computer terminal. SEE no. 172 for further description.

$23,800–$24,800 (1/80)

Kurzweil Computer Products

Computer Programs

161. Production System, Braille Document

Electronic systems designed to record braille on magnetic tape, which can be played back through terminal/embosser for high-speed production of textbooks, periodicals, and other literature. Records grade 1 or grade 2 braille.

Price not available

International Business Machines

Triformation Systems, Inc.

162. Translation Program, Braille

Program written in PL-1 computer language that translates standard English to braille. Eliminates need to know braille or braille format for production of books. Computer translator accepts variable page width and depth. Provides galley proofs, page numbers, etc. Replaces older translator. Can be varied to meet specific needs.

Price not available

International Business Machines

Copying Equipment

163. Duplicating Machine, Braille

Machine duplicates braille-embossed drawings and objects through formation of a vacuum and heat. Capable of making one to 1,000 copies (four sheets per minute) on light, paper-like plastic material (Brailon). Machine plugs into standard 115-V/60-Hz outlet. Size similar to desktop copier.

$1,240 (6/80)

American Thermoform Corporation

Triformation Systems, Inc.

Handwriting Aids

164. Learning Aid, Reading and Writing

Cards embossed with manuscript or cursive letters (upper and lower case). Letters can be traced with fingers to develop writing skills. Can be used to train blind students to "read" conventional script.

$25 (1/80)

Zaner-Bloser

Magnifiers

165. Magnifier, Multiple-Use

Wide variety of models ranging from simple hand-held or stand-mounted versions to flashlight-type and high-intensity illuminated units. Models that can be mounted on head, neck, or eyeglasses also available. Binocular, monocular, and monocular prism telescopic lenses can be hand-held or used to adapt conventional magnification devices, such as microscopes, for use by students with vision problems.

$2–$255 (1/80)

D.A. Kadan Company, Inc.
Dazor Manufacturing Corporation
Designs for Vision
Fashion Able
Foley Manufacturing Company
Keeler Optical Products
Low Vision Rehabilitation Service, Saint Barnabas Center
Phillip Barton Vision Systems, Inc.
SFB Products

166. Magnifier, Panoramic

Large lenses mounted on swing-arm stands to facilitate reading or viewing large surfaces such as newspapers, maps, and paintings.

Price not available

Ednalite Corporation
Gaylord Brothers, Inc.

167. Magnifier, Television

Attaches to any 10-inch to 25-inch television set to enlarge picture. Straight-line viewing required for optimum quality of picture.

$125 (4/80)

Beamscope Lens

Readers

168. Reader, Scroll-Action, Portable

Material placed in viewer and rolled forward or backward. Magnifying attachment with illumination available. Window 9 inches by 11½ inches. Weighs 18 pounds. Battery operated. Can be angled by carrying handle. Journals, books, paperbacks, magazines, or specific instructional lesson plans can be placed in pocket. Accessories include extra spool for reader, roll of blank paper for writing, metal clamp to lock reader onto table or desk. Three types of switches available to operate reader.

$480–$575 (1/80)

Dickey Engineering

169. Reader Tracking Guide, CRT

Tracking guide for CRT readers. Holds lens of reader against vertical display. Guide follows letters and numbers in rows or columns without losing place. Can be positioned for future reference. Avoids excessive arm fatigue that results from holding lens in place without tracking guide. Specially designed for Optacon ™ reader but can be adapted to fit most CRT readers.

$550 ($150 additional for adaptations) (1/80)

Clement Laboratories

170. Reading Machine, CRT

Machines that magnify written or typed material. Device usually consists of CRT monitor, stand, and camera support system. On most readers, video camera completely pans and tilts around room so that writing on a blackboard can be read. Usually mounted on space-saving stands, although some are portable. Various accessories available for individual needs.

Price not available

Apollo Electronic Visual Aids
Edutrainer, Inc.
Pelco Industries, Inc.
Telesensory Systems

171. Reading Machine, Tactile-Output

Print reader that converts printed material into tactile form. Printed letters and symbols reproduced exactly as printed are enlarged and displayed in a vibrating pattern that can be read with a finger. Comes in three parts: miniature camera that is moved across the line of printed copy; electronic conversion unit; and "simulator array," which creates the tactile display. Optional lens modules include lenses to read CRT displays, calculator displays, and typewritten material. Magnification lens also available. Training to operate device available.

Price not available

Telesensory Systems

172. Reading Machine, Verbal-Output

Converts printed and typewritten materials into synthetic English speech. May be used as talking calculator or computer terminal. Automatic or manual tracking system. Equipped with 33 control switches that cause the device to repeat lines, spell words, enunciate punctuation and capitalization, and mark words or phrases for future reference, etc. Attachment under development will translate printed material into grade 2 braille printout.

$23,800–$24,800 (1/80)

Kurzweil Computer Products

Reading Aids

173. Reading Stands

Reading stands adjustable for floor or table use. Also adjustable sideways for those with tunnel vision who need to adjust page columns. SEE no. 20 for further description.

$65–$130 (1/80)

American Printing House for the Blind
Gaylord Brothers, Inc.
Maddak, Inc.

Recording Accessories

174. Cassette

Low-noise polyester tape cassettes with tactile labels and storage containers.

$0.50–$2 (5/80)

National Federation of the Blind

175. Tape Indexer

Small box that plugs into recorder. Places indexing tones on any tape or cassette during recording. Functions in either a microphone or direct copying mode. Can be used without stopping tape. Works only on machines capable of audible high-speed playback.

$50 (Fall 1979)

SFB Products

176. Tape Recorder Adaption Device

Various accessories for talking book reproducers and tape players, including four-jack multiple headset adapters, variable speech control modules to amplify and control tone, pitch and rate of record playback on variable speed record players, and cassette indicators to allow blind users to determine whether tape is in motion or stopped.

$100–$130 (1/80)

American Printing House for the Blind

Recording Devices

177. Cassette Player, Talking Book

Similar to standard size cassette recorder. Plays at one-half the normal speed for recording twice as much as standard machine. Currently available only from Library of Congress branches; units not sold to schools or individuals.

Price not available

Telex Communications

178. Reproducer, Talking Book

Three-speed or variable-speed record players. Needle tracking weight very light. Extension cord, headphones, and replacement needles available separately.

$150–$210 (1/80)

American Printing House for the Blind

179. Tape Recorder, Special-Purpose

Tape and cassette players with a variety of features, including speech compression, single switch or remote control operation, and choice of two or four tracks. Available in pocket-sized and miniature versions. Speech compression models specially equipped to provide clear playback at very high tape speeds.

$60–$495 (1/80)

American Foundation for the Blind
American Printing House for the Blind
Romich, Beery & Bayer, Inc.
Semantodontics of Phoenix
SFB Products
VSC Corporation

Telecommunications Devices

180. Graphics Transmitter, Telephone

Device that provides greatly enlarged display of graphics transmitted over the telephone. SEE no. 119 for further description.

$3,500–$4,200 (1/80)

Talos System

Telephone Accessories

181. Telephone, Modified

Variety of modified telephone sets, including illuminated keyboards, Codecom™ sets that convert audio signals into vibrations on half-dollar-sized disks, braille touch-tone phones, and automatic dialers.

Contact local telephone office for price

Bell Telephone Systems

182. Telephone Pushbutton Adapter

Attachment for the top of most touch phones. Very large, easy-to-read digits on big buttons. Made of nylon and high impact materials. Special packaging, private labeling, and imprinting available.

$7–$10 (6/80)

Cleo Living Aids
Difiglio Enterprises
G.E. Miller
Maddak, Inc.
Radio Shack

183. Telephone Signaling Device, Office

Tactile device for reading lights on a multiline phone. Raised or bouncing pins indicate hold, rings, and busy signal. Can be used with pushbutton or dial phones with one to five lines.

$195 (Fall 1979)

SFB Products

Writing or Speaking

Braille Writing Materials

184. Eraser, Braille

Various types of braille erasers, including wooden and lifetime aluminum eraser with teflon tip. Various sizes. Some can be used with Perkins brailler.

$0.50–$1 (1/80)

American Printing House for the Blind
Howe Press of Perkins School for the Blind

185. Label Embosser, Braille

Embosses braille on vinyl or magnetic tape. Dial on upper rim has braille markings; that on lower rim has standard sized alphabet. Interchangeable dial has large black letters. Available characters: alphabet, number signs, commonly used contractions, word contractors, and punctuation marks.

$40–$50 (Fall 1979)

American Foundation for the Blind

186. Labeler, Large-Print

Embosses white letters and numerals on blue or black tape so that blind people can use labels if they recognize shapes of print alphabet. Dial is not brailled. Two vinyl and two magnetic rolls of tape included. Extra charge for carrying case.

$110–$125 (Fall 1979)

American Foundation for the Blind

187. Notebook, Braille

One-, two-, and three-ring binders for braille note papers or plastic fillers. Some include pockets for braille slates and tapes to attach stylus to notebook. Various sizes hold from 50 to 100 sheets. Looseleaf pocket has 20 and 28 cells. Notebook covers available.

$2.50–$15 (1/80)

American Printing House for the Blind
Howe Press of Perkins School for the Blind
National Federation of the Blind

188. Slate, Braille

Perforated plastic or metal sheets to enable student to write legible braille in straight lines by hand. Different versions allow four lines of between 19 and 41 cells each to be written between moves of the slate. Different models available to accommodate various paper sizes. Most have pins to hold paper in place. Some allow for writing on both sides of paper; some allow copy to be read without removing slate; some are attached to portable lap desks. Pocket-sized models and versions designed for use with 3-inch by 5-inch notecards also available.

$4.50–$35 (1/80)

American Foundation for the Blind
American Printing House for the Blind
Howe Press of Perkins School for the Blind

189. Stylus

Various types of styluses, including regular, for jumbo slates, reversible with teflon eraser, with steel point that can be unscrewed and inserted in aluminum handle for safe carrying, and pencil shaped. Reversible stylus has replacement points. Freehand drawing stylus produces individual upright braille dots, which helps in reproducing geometric shapes on braille paper. Jumbo freehand drawing stylus produces oversize dots.

$0.50–$3.50 (1/80)

American Foundation for the Blind
American Printing House for the Blind
Howe Press of Perkins School for the Blind

190. Small Dot Inverter

Special braille stylus that allows upward embossing. Spring-loaded punch makes small hole when pressed on paper; raised dot left when removed. Includes rubber mat to protect surface beneath paper.

$10 (1/80)

American Printing House for the Blind

Braillewriters

191. Brailler, High-Speed

Large machine reproduces books at high speed. Will do multiple copies. First machine produces two-sided, embossed metal plate; then interpoints braille on paper. Repeats operation up to 250 times in 7 hours. Can also be used as duplicator.

Price not available

Triformation Systems, Inc.

192. Braillewriter, Electric

Electric typewriter with typebars embossed with dots representing upside-down braille. Braille is typed rightside up. Does not require knowledge of the composition of each braille symbol.

Price not available

International Business Machines

193. Braillewriter, Manual

Also known as "Perkins Brailler." Encased by aluminum. No protruding carriage. Dots embossed uniformly regardless of unequal pressure on keys. Keeps uniform margin. Quiet enough for classroom or lecture hall. Over-sized braille cell and dot available. Straight extension keys designed to assist those with limited arm strength (requires both hands). Unimanual model for persons with use of only one hand. Electric model available. Repair manual additional.

$90–$360 (1/80)

American Printing House for the Blind
Howe Press of Perkins School for the Blind

194. Information System, Braille

Device that performs various functions such as reading braille, storing and retrieving information, and producing braille. SEE no. 159 for further description.

$7,600 (6/80)

Papenmeier Corporation

195. Shorthand Board, Braille

Portable keyboard for taking shorthand or notes. No stylus needed. Fits in large pocket.

$35 (1/80)

Boston Parkway Lion's Club

Computer Hardware and Accessories

196. Computer Printer-Receiver, Braille

Portable receiver in a case that produces brailled output on tape using coded data from computer or other source. Blind/deaf and blind users can collect information such as stock quotations or communications from the Blind-Deaf Network.

Price not available

Triformation Systems, Inc.

197. Information Processor, Braille, Paperless

Electronic paperless braille information processor that, when added to an electronic braille typewriter, produces braille from stored information. SEE no. 158 for further description.

Price not available

Telesensory Systems

Handwriting Aids

198. Drawing Kit, Raised-Line

Raised line drawing and writing instrument consisting of a fairly large frame that stretches paper. Pressure is applied to "stretched" paper with writing implement to cause raised tactile lines. Used for handwriting, mobility, instructional, vocational, etc., skills. Another kit has drawing board with mylar polyester film sheets for use with ballpoint pen-type stylus. Draftsman's compass for use with kit also available.

$18–$795 (1/80)

American Foundation for the Blind
American Printing House for the Blind
Taylor Enterprises, Inc.

199. Pen, "Seeing Eye"

Fiberoptic sensor located in tip of pen follows written pattern by emitting signals. SEE no. 22 for further description.

$75–$125 (1/80)

G.E. Miller
Wayne Engineering Company, Special Education Division

200. Signature Guide

Plastic guard with rectangular aperture to be used as signature guide. Assists in keeping handwriting on specified line for checks or forms. Fits into most wallets. Other types available include double bar arrangement that allows guided writing across page one line at a time. Margin stop. Clipboard attachment. Another model features raised lines on a plastic sheet that is placed under a sheet of paper. Check and envelope addressing stencils available.

$0.50–$18 (1/80)

American Foundation for the Blind
Sped Publications

Paper

201. File Cards, Braille

Made of vinyllite, which is similar to cardboard. Takes ink, pencil, typing, and brailling. Recommended by manufacturer for heavily used permanent files. Available in a variety of sizes. Can be brailled with a slate or by machine.

$3–$3.50 per 20 (Fall 1979)

American Foundation for the Blind

202. Paper, Brailling

Various types of paper designed for use with braillewriters and/or slates. Variations include notepapers, transcribing paper, and specially folded slate paper. Available in a variety of sizes. Heavy and regular grade.

$1–$10 (1/80)

American Foundation for the Blind
American Printing House for the Blind
Howe Press of Perkins School for the Blind
National Federation of the Blind

203. Paper, Graph

Graph paper with bold lines or embossing for use by blind or visually impaired people. SEE no. 281 for further description.

Embossed: $1–$2 per 50 sheets (1/80)

American Printing House for the Blind

204. Paper, Writing

Lined and plain writing papers for visually impaired users. Lines printed or embossed. Writing paper is of soft stock that retains impression of pen or pencil.

$1.50–$4.50 per 100 sheets (1/80)

American Printing House for the Blind

Readers

205. Reader, CRT

Readers that magnify copy and thus make longhand writing or typing possible. SEE no. 170 for further description.

Price not available

Apollo Electronic Visual Aids
Edutrainer, Inc.
Pelco Industries, Inc.
Telesensory Systems

Typewriters, Modified

206. Typewriter, Large-Type

Electric typewriters in compact or office-size models. Equipped with type sized at six spaces per inch and four lines per vertical inch. Ribbon coated with extra-heavy ink to provide bold-faced type. One model has continuous feed paper attachment, cushioned arm rest, and elevated keyboard mask for individuals with spastic movements or tremors.

$365–$395 (2/80)

Olympia USA, Inc.
Smith-Corona/SCM Corporation
Typewriting Institute for the Handicapped

207. Typewriter, Talking

Voice synthesizer that simulates speech. Tells typist what has been typed, what line is next, etc. Unit consists of audio keypad, audio console, and optional headset. Typewriters that can be modified are IBM Mag Card III, IBM Mag Card/A, IBM Memory, and IBM Memory 100.

Price not available

International Business Machines

General Applications

Braille Writing Aids

208. Mailing Tube, Braille

Crush-proof cardboard tubes for mailing braille-inscribed materials. Mailing labels available separately.

$4 (Fall 1979)

American Printing House for the Blind

Clocks

209. Clock, Digital, Brailled

Digital display of hours, minutes, seconds. Has alarm, 10-minute buzzer, and on-off switch for elapsed time indicator.

$55–$80 (Fall 1979)

American Foundation for the Blind
SFB Products

Games

210. Audio Electronic Games

Eight electronic games linked to microprocessor, which generates speech and other audio cues to provide information about game. Playing surface is numerical keyboard that provides audible verification. Can be used by individuals or groups. Automatic scoring. Stereo headphones included. Jacks provided for additional headphones or speakers. Games include tic-tac-toe, blackjack, craps, and paddleball.

$995 (Fall 1979)

American Foundation for the Blind
Telesensory Systems

211. Board Games, Large-Print and Brailled

Various games designed for the visually impaired. Instructions and lettering in braille, jumbo braille, and large print. Jumbo playing cards and solitaire board available for users with low vision. Games include dominoes, playing cards, chess, large-type crosswords, deluxe Backgammon, Scrabble, and Monopoly.

$0.50–$25 (1/80)

American Foundation for the Blind
Howe Press of Perkins School for the Blind

Household Devices

212. Kitchen Scales, Braille

Scales for weighing foods, etc. Braille markings.

$17–$100 (Fall 1979)

American Foundation for the Blind

213. Labeling Kit, Braille

Twenty-five strips of clear plastic large enough to circle a number 10 can. Strips can be cut to smaller size. Included are 25 elastic bands with clips. Can be used with stylus and slate. Extra strips, fasteners, and hole punch available.

$4.50 (Fall 1979)

American Foundation for the Blind

214. Sewing Aids, Low-Vision

Sewing machine magnifier, brailled clothing tags, self-threading needles, brailled sewing gauges, etc.

$1–$4 (Fall 1979)

American Foundation for the Blind

Identification Aids

215. Identifier, Paper Money

Compact machine that identifies paper money by tones. Used by sliding bills under sensor.

$200 (1/80)

Applied Rehabilitation Systems

Orientation Aids

216. Diagramming Kit, Magnetized

Neoprene pads that can be used in conjunction with magnetized stick-ons to create space-orientation diagrams. SEE no. 238 for further description.

$10–$21 (1/80)

Howe Press of Perkins School for the Blind

217. Guidance System, Sonar

Environmental sensor that uses sound to detect objects in a pathway. Indicates distance, location, and surface characteristics of objects by emitting ultrasound. One type resembles eyeglasses. The other is a hand-held unit that has a vibrating signal to indicate objects by the amount of vibration. Effective travel aid for low-vision and blind people but should be used with other travel aids such as a cane or dog.

Price not available

Telesensory Systems

218. Identification Plate, Steel

Stainless steel plates designed primarily for floor and control markings in elevators. Can also be used as identification for file drawers, machinery, etc. Polished steel with embossed and/or braille letters, numerals, and symbols. Backs coated with acrylic adhesive.

$3 (1/80)

Stencil Cutting and Supply Company

219. Mapmaking Kit, Tactile

Mapmaking kits that use thin plastic film as surface for embossed maps and diagrams. Can be used to produce single maps or to create bound orientation booklets containing several maps and diagrams. Images and directions can be produced in both low-vision print and braille. May also be used in conjunction with taped orientation instructions. In addition to do-it-yourself kit, company provides custom mapmaking.

Custom service: $100–$10,000; kit: price not available

Gilligan Tactiles, Inc.

220. Mapmaking Supplies, Tactile

Aluminum diagramming rolls and special papers that can be used to create maps or diagrams for interpretation by touch. SEE no. 198 and 280 for further description.

$18–$795 (1/80)

American Foundation for the Blind
American Printing House for the Blind
Taylor Enterprises, Inc.

221. Marking Kit, Tactile

Liquid applied from a tube dries to three-dimensional raised marking that withstands washing. Reproduces by Thermoform. Bright orange. Braille and large print instructions included. Useful for creating tactile symbols or orientation map.

$3 (Fall 1979)

American Foundation for the Blind

222. Sign-Making Machine, Tactile

Machine with dies that cut out four sizes of letters as well as pictorial representations. Can be cut from materials with different textures such as felt, sandpaper, thin plastic, etc. Useful for making markings for drawers.

$695 (8/80)

Ellison Enterprises

223. Signs, Plastic, Embossed

Signs for indoor use with raised letters and pictorial representations. Pressure-sensitive backing strips or two holes for mounting. Signs can be custom made. Custom-ordered signs have white copy on black background. Other signs have white with blue. Signs, plaques, and directories can be ordered in braille.

$1–$15; custom order: $31–$38 (5/80)

Ability Building Center, Inc.
Diversified Enterprises
Fashion Able
Seton Name Plate Corporation

224. Sound Source, Stationary

Outdoor trumpet speaker mounted on oscillator that emits intermittent tone to provide directional guidance for blind. Volume, tone, and rate of signal adjustable.

$60 (1/80)

American Printing House for the Blind

Recording Accessories

225. Audiometer, Audible

Audio level monitor equipped for use by the blind. Connects to output jack of recorder. Battery operated. Available in amateur and professional models. Amateur model can be converted to stereo with separate switch box available as accessory. Stereo switch standard on professional model.

$50–$250 (1/80)

SFB Products

Signaling Devices

226. Alarm, Power Failure

Audible alarm that warns of power failure. Useful for alerting blind individuals in areas such as laboratories or art centers.

$50 (1/80)

Maddak, Inc.

Fine Arts and Crafts

Drawing and Drafting Equipment

227. Drawing and Drafting Frame

Aluminum frame supported by wooden legs. Holds paper up to 11½ inches by 14½ inches. Fits on desk top. Adjustable.

$10 (1/80)

American Printing House for the Blind

Music Equipment

228. Metronome, Tactile

Metronome adapted for tactile reading. Beats per minute increase or decrease according to where pointer is set. Double raised dots placed at 60, 72, 120, and 144 beats. Single raised dots placed at 40, 96, and 208 beats.

$33 (Fall 1979)

American Foundation for the Blind

229. Notation Kit

Enables blind individuals to express musical phrases in conventional notation. Includes 10-line staff, guide brace, and 129 musical characters. Comes with carrying case.

$195 (1/80)

American Printing House for the Blind

230. Rack, Music

Wooden music rack for partially sighted. Attaches to any piano. Holds sheet music closer to pianist. Adjustable in three directions. Adjustable music stand used as pedestal or table holder also available.

$31 (1/80)

American Printing House for the Blind

231. Slide Rule, Chord

Hand-held device that simulates fingerboard of fretted instruments. Chords restructured to suit specific instruments. Helps visualization of spatial relationships. SEE no. 49 for further description.

Not manufactured commercially

Joseph F. Matyas

232. Staff Paper

Large type. Ivory paper (11 inches by 16 inches) imprinted with four five-line staves in heavy black ink.

$4 per 200 sheets (1/80)

American Printing House for the Blind

Natural Sciences and Mathematics

Calculating Devices

233. Calculating Slate, Pegboard

Pegboard slate ("British Taylor Slate") for doing arithmetic or algebraic calculations. Eighteen by 24 holes with plastic tray to hold spare type. One pound of type included. Extra arithmetic and algebra type available.

$8–$12 (Fall 1979)

American Foundation for the Blind

234. Calculators, Abacuses, and Slide Rules

For use by blind or partially sighted people. Available in a range of sizes from pocket-size to desktop models.

$3–$28 (1/80)

American Printing House for the Blind

235. Graphing Board, Tactile

Cork graphing board with raised grid for tactile graphing of equations.

$21 (1/80)

American Printing House for the Blind

Calculators, Electronic

236. Calculator, Talking

Six-function calculator with 24-word speech output. Visual readout for sighted users. Key notation in large print for partially sighted users. Six-foot-long antitheft cable available as an accessory. Speech key can be depressed to announce position without initiating function calculations. Volume loud enough for small classrooms but earphones available for individual use. Braille or recorded instructions available in French, German, and Arabic languages. Carrying case included.

$395–$420 (1/80)

American Foundation for the Blind
American Printing House for the Blind
Telesensory Systems

237. Reading System

Kurzweil Reading Machine ™ can be used as talking calculator. SEE no. 172 for further description.

$23,800–$24,800 (1/80)

Kurzweil Computer Products

Geometry Learning Aids

238. Diagramming Kit

Kit consisting of assorted magnetic rubber strips and steel work board with 1-inch grid squares to simplify the teaching of diagrams. Can also be used for spatial orientation. Comes with case.

$10–$21 (1/80)

Howe Press of Perkins School for the Blind

239. Shapes, Geometric

Learning aids for plane and solid geometry. Shapes and sections in plastic, wood, or wire. Can be used to teach blind students. Available in sets of 8 to 60 pieces.

$5–$90 (1/80)

American Printing House for the Blind

Magnifiers

240. Microscope Illuminator

Supplemental illuminators that provide cool shadowless light. Some models designed with a flexible stand for tabletop use; others attach to microscope. Available with one- or two-button switches. Units to start illuminator available as an accessory.

$32–$275 (11/79)

American Optical Company
Stocker and Yale, Inc.

241. Microscope Projector

Image on microscope projected on a large viewing screen for group or for people unable to use microscopes. Entire slide scanned slowly. Selective portions of image can be enlarged. Screen not included. Two models available in different voltages.

$5,355–$5,560 (1/80)

American Optical Company

242. Miscellaneous Magnifiers

Hand-held, bracket-mounted, or table-based magnifiers for technical and laboratory use. Most illuminated.

$12–$345 (11/79)

Designs for Vision
Keeler Optical Products
Low Vision Rehabilitation Service, Saint Barnabas Center
Stocker and Yale, Inc.

Measuring Devices

243. Audiometer, Audible

Audiometer that provides audible readout. SEE no. 225 for further description.

$50–$250 (1/80)

SFB Products

244. Barometer, Tactile

Raised dots at every tenth of an inch. Brass-plated.

$15 (Fall 1979)

American Foundation for the Blind

245. Bridge, Impedance

Custom-made impedance bridge used for audible measurement of components during repair of electronic equipment. Can be used in student laboratories and professional technical work. Measures AC/DC resistance, inductance, capacitance, figure of merit of coil, and dissipation factor of capacitor. Instructions recorded on cassette.

$550 (Fall 1979)

SFB Products

246. Counters and Scanners

Various optical and electronic devices such as projectors, vertical scanners, optical sensors, and electronic counters. Designed for specific needs.

Price not available

Stocker and Yale, Inc.

247. Indicator, Liquid-Level

Electronic audible indicator that enables a person to ascertain the level of a liquid being poured. Device hung over the side of the container. Powered by standard hearing aid battery.

$16 (Fall 1979)

American Foundation for the Blind

248. Learning Aid, Scientific Measurement

Teaches basic techniques of scientific measurement. Kit contains pan balance and weights, spring balance, 12-inch ruler with caliper slide, overflow and catch cans, and an assortment of 1-cubic-inch gravity specimens. All devices adapted to provide tactile readings for blind students.

$170 (1/80)

American Printing House for the Blind

249. Light Meter, Audible

Small hand-held device that creates acoustical signals of varying frequencies for varying intensities of emitted or reflected light. Battery operated. Approximately half the size of a package of cigarettes. Can distinguish different colors. One type also provides audible indication of fluid levels. Augmented signals for hearing impaired.

$45–$70 (1/80)

Applied Rehabilitation Systems
San Francisco Lighthouse for the Blind
SFB Products

250. Meter Adapter, Brailled

Meter with brailled numbers that can be connected to any electrically driven visual meter. Provides audible signal in addition to braille readout. Can be connected to four different meters at once.

$90–$215 (Fall 1979)

SFB Products

251. Multimeter, Electrical

Volt-ohm multimeters used for testing electronic equipment under repair in student laboratories or for professional work. Measures direct current and alternating current voltage, DC resistance and current, and AC output of electronic equipment. Braille scale and audio output provided. Reading obtained by turning the knob for a null.

$155 (Fall 1979)

American Foundation for the Blind
SFB Products

252. Null Indicator

Tone indicates when electrical circuit is balanced. Connected to impedance bridges, laboratory potentiometer circuits, or precision resistance measuring bridges. Used as amplifier for testing circuits or for balancing alternating current bridges.

$40 (Fall 1979)

SFB Products

253. Rulers and Protractors

Wide variety of adapted measuring devices, including circular slide rule with linear and logarithmic scales in braille, and large type and brailled protractors, compasses, and rulers. Trundle-wheeled measurer with audible output also available. Some rulers attach to table or desk for stationary use.

$1–$35 (1/80)

American Foundation for the Blind
American Printing House for the Blind
Howe Press of Perkins School for the Blind
Judy Company
National Federation of the Blind

254. Scales, Brailled

Scales with tactile markings.

$17–$100 (Fall 1979)

American Foundation for the Blind

255. Thermometer, Audible

Thermometer probe at end of flexible cable. Tone balances to zero so temperature can be read. Brailled scale used for reading. Can be used indoors or outdoors in a darkroom, laboratory, clinical environment, or other special place.

$100–$125 (Fall 1979)

SFB Products

256. Thermometer, Large-Print

Thermometer with 18-inch dial, bold-faced black numbers, and bright red pointer. Available in Fahrenheit, Celsius, or combination scales. Temperature limits -30 to 120 degrees Fahrenheit, -35 to 50 degrees Celsius.

$16 (Fall 1979)

SFB Products

257. Thermometer, Talking

Thermometer that provides synthesized speech readout. With use of different probes (included), device functions as indoor, outdoor cooking implement or as a clinical (oral/rectal) thermometer. Measures from -25 to 250 degrees Fahrenheit. Optional high heat probe measures up to 400 degrees Fahrenheit. Brailled controls. Battery operated.

$185–$200 (Fall 1979)

American Foundation for the Blind

258. Thermometer-Hygrometer, Brailled

Two scales in one unit with separate indicators for each. Single and raised dots. Black numerals.

Price not available

SFB Products

Medical Equipment

259. Sphygmomanometer, Tactile

Blood pressure instrument with stethoscope. Has a 300-mm scale. Raised dots placed at edge of pressure gauge at each 20 mm of pressure. Glass is removed from gauge so dots can be felt. Notches filed at each 100 mm. Needle bent up for easy reading. Lens cover, zipper pouch, and instructions included.

$45 (Fall 1979)

American Foundation for the Blind

260. Syringe Magnifier

Plastic, snap-on magnifier. User must be able to read typewriter print. One size fits all syringe needles.

$4 (Fall 1979)

American Foundation for the Blind
SFB Products

261. Thermometer, Audible

Thermometer with probe that provides audible indication of temperature. Useful for medical as well as other applications. SEE no. 255 for further description.

$100–$125 (Fall 1979)

SFB Products

Tools

262. Tools, Carpentry, Brailled

Variety of brailled tools, including protractors, saw guides, angle dividers, drill guides, levels, electronic levelers, wood-making gauges, steel framing squares, combination squares, caliper rulers, brad pushers, and micrometers. Large type also available.

$5–$120 (Fall 1979)

American Printing House for the Blind

Physical Education, Athletics, and Recreation

Basketball Equipment

263. Basketball Goal Sensor, Electronic

Electronic unit attached to hoop that emits a tone when basket is made.

$210 (12/79)

Jayfro Corporation

264. Basketball Hoop and Return Net, Oversized

Oversized basketball hoops and return nets make it easier to make a basket and retrieve ball. SEE no. 89 for further description.

$125–$660 (1/80)

Flaghouse
Jayfro Corporation
Maddak, Inc.

Bowling Equipment

265. Bowling Rail

Thirty-one- to 36-inch banister guide for bowlers needing directional assistance. Support detaches in two parts for easier mobility. Extension for guide available.

$40–$55 (1/80)

American Foundation for the Blind

Recreation Equipment

266. Ball, Beeper

Foam ball with battery-operated beeper. Assists in identifying location. Balls with bell inside also available.

$17–$60 (1/80)

American Foundation for the Blind
Taylor Enterprises, Inc.

267. Frisbee, Beeping

Microminiature beeping electronic system that assists in identifying location. Batteries easily changed.

$15 (1/80)

Taylor Enterprises, Inc.

Braille Writing Aids

268. Labeling Tape, Braille

Tape for braille embossing Comes in rolls, packages, sheets, and spools. Can be embossed with braille embosser, one-line slate and stylus, or braillewriter. Pressure-sensitive backing covered with peel-away coating. Also available in aluminum and vinyl. Magnetic tape and clear tape that will not obscure material on surface available. Single- or double-line tape strips that can be stuck to the top flap of a slate also available.

Price depends on packaging

American Foundation for the Blind
American Thermoform Corporation
Howe Press of Perkins School for the Blind
SFB Products

Calculators, Electronic

269. Calculator, Braille

Totals and records intermediate numbers in braille on ½-inch-wide paper. Operated by keyboard.

$900 (Fall 1979)

SFB Products

Computer Hardware and Accessories

270. Computer Printer-Receiver, Braille

Portable receiver that prints brailled tape output from coded data sources. SEE no. 196 for further description.

Price not available

Triformation Systems, Inc.

271. Computer Terminal, Talking

Terminal with speech output that can access information stored on another computer. Special operating commands. Terminal responds at variable rates. With a different program and an ink printer, student can fill out various forms as well as learn word processing skills.

$3,500 (1/80)

Maryland Computer Services

Computer Programs

272. Computer Program, Talking

System provides speech output of both retrieved and entered data. No CRT needed. SEE no. 107 for further description.

Price not available

ASI Teleprocessing

Geography Materials

273. Globes

Floor and table model globes with geographic features in three-dimensional relief. Some models have embossed latitude and longitude lines. Braille mileage scales and identification labels also available.

$45–$495 (1/80)

American Printing House for the Blind
Nystrom Company

274. Mapmaking Kit, Tactile

Kit for production of maps and diagrams that can be interpreted by touch. SEE no. 219 for further description.

Price not available

Gilligan Tactiles, Inc.

275. Maps and Atlases

Maps and atlases in large-type, relief, or braille versions. Place names, latitude, longitude, and keys printed in braille. Some models can be dissected. Available in portfolios as well as in table-top or easel models. Storage folders and easels available separately. Some also have metric scaling.

$1–$300 (1/80)

American Printing House for the Blind
Nystrom Company

Library Equipment

276. Study Center, Multimedia

Desk unit that can be equipped with adaptive devices for specific needs. SEE no. 140 for further description.

Price depends on specific order (1/80)

Gaylord Brothers, Inc.

Measuring Devices

277. Light Meter, Audible

Small sound source that can be used with various accessories to distinguish colors and light intensities. SEE no. 249 for further description.

$45–$70 (1/80)

Applied Rehabilitation Systems
San Francisco Lighthouse for the Blind
SFB Products

278. Rulers and Protractors

Wide variety of distance and angle measuring devices adapted for use by visually impaired or blind people. SEE no. 253 for further description.

$1–$35 (1/80)

American Foundation for the Blind
American Printing House for the Blind
Howe Press of Perkins School for the Blind
Judy Company
National Federation of the Blind

279. Timers, Braille and Large-Print

Brailled faces. Some timers can be linked to one or more electrical devices to turn on and off. A stop watch with raised dots can be read to an accuracy of 5 seconds. Large-print timer available.

$10–$55 (Fall 1979)

American Foundation for the Blind
Maddak, Inc.
Nystrom Company

Paper

280. Diagramming Sheets, Aluminum

Rolls of aluminum (10½ inches by 150 inches) that retains impressions when drawn upon. One side painted white to accept drawings made in pencil or ink.

Price not available

American Printing House for the Blind

281. Graph Paper, Bold-Line and Embossed

Graph paper in embossed or bold-line versions. Available in both grid and polar coordinate patterns. Various sizes.

Embossed: $1–$2 per 50 sheets (1/80)

American Printing House for the Blind

Recording Accessories

282. Storage Container, Record

Cloth-bound containers made of fiberboard or wood for records, tapes, or brailled documents. Variety of sizes and capacities. Most have slots for conventional or brailled labels.

$1–$4 (1/80)

American Printing House for the Blind

Appendix A
Sources of Assistive Devices

The following sources have been identified in the Assistive Services Directory as manufacturers or distributors of assistive devices useful for the disabled college or university student. Addresses and telephone numbers were collected between April and June 1980. Several of the sources do not have telephone numbers listed, and some addresses may be simply business mailing addresses rather than the actual location of the source.

A.R. Mann
1560 W. William St.
Decatur, IL 62522
(217) 422-6023

Ability Building Center, Inc.
P.O. Box 6938
1911 14 St. N.W.
Rochester, MN 55901
(507) 289-1891

Active Aid, Inc.
501 E. Tin St.
Redwood Falls, MN 56283
(507) 637 2951

Alexander Graham Bell Association for the Deaf, Inc.
3417 Volta Pl., N.W.
Washington, DC 20007
(202) 337 5220

American Art Clay Company, Inc. (AMACO)
4717 W. 16 St.
Indianapolis, IN 46222
(800) 428 4302
IN residents: (collect) (317) 244-6871

American Communications Corporation
180 Roberts St.
East Hartford, CT 06108
(203) 289 3491

American Foundation for the Blind Consumer Products Department
15 W. 16 St.
New York, NY 10011
(212) 620 2171
(212) 620 2173
(800) 322 4400

American Optical/Scientific Instrument Division
Box 123
Buffalo, NY 14240
(716) 895 4000

American Printing House for the Blind
P.O. Box 6085
Louisville, KY 40206
(502) 895 2405

American Thermoform Corporation
8640 E. Slauson Ave.
Pico Rivera, CA 90660
(213) 723 9021

Apollo Electronic Visual Aids
6357 Arizona Circle
Los Angeles, CA 90045
(213) 776-3343

Applied Communications Corporation
517C Marine View Ave.
P.O. Box 555
Belmont, CA 94002
(415) 592-1622

Applied Rehabilitation Systems
3902 Idlewild
Austin, TX 78731
(512) 452 2269

ASI Teleprocessing
101 Morse St.
Watertown, MA 02172
(617) 923 1850

Audiophonics Corporation
95 Rantoul St.
Beverly, MA 01915
(617) 922 6420

Automated Data Systems, Inc.
P.O. Box 4062
Madison, WI 53711
(608) 273 0707

Bailey Manufacturing
118 Lee St.
Lodi, OH 44254
(216) 948 1080

Beamscope Lens
P.O. 8075
Washington, DC 20024
(202) 554 0617

Bell Telephone Systems
Local Address

Better Sleep
57 Industrial Rd.
Berkeley Heights, NJ 07922
(201) 464 2200

Boston Parkway Lion's Club
Attn: Phillip Pofcher
749 South St.
Roslindale, MA 02131
(617) 325 0900

Brodhead & Garrett
4560 E. 71 St.
Cleveland, OH 44105
(800) 321 6730
OH residents: (800) 362 8915

C-Phone, Inc.
1314 Hanley Industrial Court
St. Louis, MO 63144
(314) 961-5626

Charles Mayer Studios, Inc.
168 E. Market St.
Akron, OH 44308
(216) 535 6121

Charlton Manufacturing
3511 Highway D
West Bend, WI 53095
(414) 334 7391

Clement Laboratories
2560 Wyandotte St.
Mountain View, CA 94040
(415) 964 0921

Cleo Living Aids
3957 Mayfield Rd
Cleveland, OH 44121
(216) 382 9700

D.A. Kadan Company, Inc.
15 Oak St.
Mt. Vernon, NY 10550
(914) 664 6030
(212) 863 4833

Dakon Corporation
1836 Guildord Ave.
New Hyde Park, NY 11040
(516) 775 5525

Dazor Manufacturing Corporation
4455 99 Duncan Ave.
St. Louis, MO 63110
(314) 652 2400

Designs for Vision
120 E. 23 St.
New York, NY 10010
(800) 221 3476
NY residents: (212) 674 0600

Dickey Engineering
Three Angel Rd
North Reading, MA 01864
(614) 664 2010

Difiglio Enterprises
1350 So. Levitt St.
Chicago, IL 60608
(312) 733 6400

Diversified Enterprises
5584 Willow Highway
Grand Ledge, MI 48837
(517) 627-3137

Earmark, Inc.
1125 Dixwell Ave.
Hamden, CT 06514
(203) 777-2130

Eberhard Faber, Inc.
Crestwood Industrial Park
Wilkes Barre, PA 18773
(717) 474-6711

Ednalite Corporation
200 N. Water St.
Peekskill, NY 10566
(914) 737-4100
(212) 562 7200

Educational Microcomputer Systems
One Clear Spring
Irvine, CA 92715
(714) 556 7608
(714) 833 2322

Edu Trainer, Inc.
415 No. Alfred St.
Alexandria, VA 22314
(703) 548 4245

Ellison Enterprises
P.O. Box 7986
Newport Beach, CA 92660
(714) 957 3030

Evans Specialty Company, Inc.
14 E. 15 St.
P.O. Box 24189
Richmond, VA 23224
(804) 232 8946

Fairway King
3 E. Main
Oklahoma City, OK 73104
(405) 236 0882

Fashion Able
P.O. Box S
Rocky Hill NJ 08553
(609) 921 2563

Fetty Nielsen
P.O. Box 1511
Wedgewood Station
Seattle, WA 98115

Flaghouse
18 W. 18 St.
New York, NY 10011
(212) 989 9700

Foley Manufacturing Company
3300 Fifth St. N.E.
Minneapolis, MN 55418
(612) 789 8831

Fred Sammons
P.O. Box 32
Brookfield, IL 60513
(800) 323-7305
IL residents: (312) 971-0610

G.E. Miller
484 So. Broadway
Yonkers, NY 10705
(800) 431-2924
NY residents: (914) 969-4036
(212) 549-4850

Gaylord Brothers, Inc.
P.O. Box 4901
Syracuse, NY 13221
(315) 457 5070

Gendron, Inc.
Lugbill Rd
Archbold, OH 43502
(419) 445 6060

George H. Synder, Inc.
5809 N.E. 21 Ave.
Fort Lauderdale, FL 33308
(305) 772 6526

Gestetner Corporation
Gestetner Park
Yonkers, NY 10703
(914) 968 6666

Hallmark Orthopedic Specialities
20 LaPorte St.
Arcadia, CA 91006
(213) 447 0995
(213) 466 4882
(213) 466 8668

Hammatt & Sons
1441 No. Red Gum, Bldg. E
Anaheim, CA 92806
(714) 632 8530

Hausmann Industries
130 Union St.
Northvale, NJ 07647
(800) 526 0289

HC Electronics
250 Camino Alto
Mill Valley, CA 94941
(415) 383 4000

Hein-a-Ken Corporation
P.O. Box 56
Thief River Falls, MN 56701

Heywood-Wakefield Company
Public Seating Division
Monominee, MI 49858
(906) 863 2661

Howe Press
Perkins School for the Blind
175 No. Beacon St.
Watertown, MA 02172
(677) 924 3434 ext. 208

Infolink Corporation
1925 Holste Rd.
Northbrook, IL 60062
(312) 291-2900

International Business Machines (IBM)
Office Products Division
Parson's Pond Dr.
Frankling Lakes, NJ 97417
(201) 848 1900

J.A. Preston Corporation
71 Fifth Ave.
New York, NY 10011
(212) 989 9700

Ja-Son Division
The Scott & Fetzer Company
217 Long Hill Cross Rds.
Shelton, CT 06484
(203) 929 5371

Jaeco Orthopedic Specialities
P.O. Box 75
Hot Springs, AK
(501) 623 5944

Jayfro Corporation
P.O. Box 400
Waterbury, CT 06385
(203) 447 3001

Jennings Park, Playground and School Equipment
2150 So. Shore Dr.
Macatawa, MI 49434
(616) 335 5831

John Kallender
776 18 Ave.
Menlo Park, CA 94025
(415) 325-4248

Joseph F. Matyas
218 Second St.
Hicksville, NY 11801
(516) 931 7098

Judy Company
310 No. Second St.
Minneapolis, MN 55401
(612) 333 6471

Keeler Optical Products
Broomall, PA 19008
(215) 353 4350
211 Floweridge Dr.
Palos Verdes Peninsula, CA 90274
(213) 377 0708

Ken McRight Supplies
7456 So. Oswego
Tulsa, OK 74136

Krown Research
10331 W. Jefferson Blvd.
Culver City, CA 90230
(213) 559 6767

Kurzweil Computer Products
33 Cambridge Pkwy.
Cambridge, MA 02142
(617) 864 4700

La Berne Manufacturing Company
P.O. Box 9245
Columbia, SC 29290
(803) 776-1115

Leclerc Corporation
Highway 9
P.O. Box 491
Plattsburg, NY 12901
(518) 561-7900

Low Vision Rehabilitation Service
Eye Institute
Saint Barnabas Medical Center
Old Short Hills Rd.
Livingston, NJ 07039
(201) 533-5123

Lumex, Inc.
100 Spence St.
Bay Shore, NY 11706
(516) 273-2200
2960 Leonis Blvd.
Los Angeles, CA 90058
(213) 583-1648

Luminaud, Inc.
P.O. Box 257
7670 Acacia Ave.
Mentor, OH 44060
(216) 255-9082

Maddak, Inc.
Industrial Rd
Pequannock, NJ 07440
(201) 694-0500

Mailhawk Manufacturing Company
Warm Springs, GA 31830

Maryland Computer Services
101 Thomas St. at Bard
Bel Air, MD 21014
(301) 838-8883
Baltimore area: (301) 879-3366

McMartin Industries, Inc.
4500 So. 76 St.
Omaha, NE 68127
(402) 331-2000

Medelec: A Vickers Medical Company
Manor Way
Old Woking Surrey GU22 9JU
England

NASCO
901 Jamesville Ave.
Fort Atkinson, WI 53538
(800) 242-9587
(800) 558-9595
NASCO West
1524 Princeton Ave.
Modesto, CA 95352
(209) 529-6995

National Federation of the Blind
1800 Johnson St.
Baltimore, MD 21230
(301) 659-9314

National Technical Institute for the Deaf
Bookstore
One Lomb Memorial Dr.
Rochester, NY 14623
(716) 475-6400

Nationwide Flashing Signals System
P.O. Box 6146
Silver Spring, MD 20906
(301) 593-2755

Neil Henson Company
P.O. Box 132
Jackson, MI 63755
(314) 243-3653

Nelson Medical Products
5960 A
Sarasota, FL 33581
(813) 924-2058

Norver Company
7300 No. Crescent Blvd.
Pennsauken, NJ 08110
(609) 665-2020

Nystrom Company
Division of Carnation
3333 Elston Ave.
Chicago, IL 60618
(312) 463-1144

Olympia U.S.A., Inc.
P.O. Box 22
Somerville, NJ 08876
(201) 722-7000

Papenmeir Corporation
U.S. Distributor
15659 Dover Rd.
Upperco, MD 21155
(301) 526-6444

Pelco Industries, Inc.
351 E. Alondra Blvd.
Gardena, CA 90248
(213) 321-5591

Petronics B.U.
Herreweg 441b
2161 DB Lisse
The Netherlands

Phillip Barton Vision Systems
3911 Yorklane
Bowie, MD 20715
(301) 262-3665

POSSUM, Inc. (Patient Operated
Electronic Mechanisms for the Severely
Physically Disabled)
14 E. 17 St.
New York, NY 10003
(212) 243-1658
P.O. Box 218
Seal Beach, CA 90740
(714) 840-2147

Prentke Romich Company
R.D. 2 Box 191
Shreve, OH 44676
(216) 567-2906

Raymo Products, Inc.
212 S. Blake St.
Olathe, KS 66061
(913) 782-1515

Romich, Beery & Bayer, Inc.
R.D. 2, Box 191
Shreve, OH 44676
(216) 567-2906

Roslyn Equipment Company
1645 Bustleton Pike
Feasterville, PA
(800) 523-3938
PA residents (collect): (215) 364-0608

San Francisco Lighthouse for the Blind
745 Buchanan St.
San Francisco, CA
(415) 431-1481

SCAT: Electric Elevating Chair
General Teloperators, Inc.
Downey St.
Paramount, CA 90723
(213) 634-6531

SciTronics, Inc.
423 So. Clewell St.
P.O. Box 5344
Bethlehem, PA 18015
(215) 868-7220

Sears, Roebuck, and Co.
Sears Tower
BSC-41-3
Chicago, IL 60684
(312) 875-2500

SELA Electronics Company
545 W. End Ave.
New York, NY 10024
(212) 787-7925

Semantodontics of Phoenix
P.O. Box 15668
3714 E. Indian School Rd.
Phoenix, AZ 85060
(800) 528-1052
AZ residents: (602) 953-5662

Seton Name Plate Corporation
592 Boulevard
New Haven, CT 06505
(203) 772-2520

SFB Products
Box 385
Wayne, PA 19087
(215) 687-3731

Skill Development Equipment Corporation
P.O. Box 6300
1340 No. Jefferson St.
Anaheim, CA 92807
(714) 524-8750

Smith-Corona
Consumer Products Division
65 Locust Ave.
New Canaan, CT 06840
(203) 972 1471

Snitz Manufacturing Company
2096 So. Church St.
East Troy, WI 53120
(800) 558-2224
WI residents: (414) 642-3991

Sparr Telephone Arm Company
P.O. Box 143
Allamuchy, NJ 07820
(201) 852 6309

Specialized Systems, Inc.
11558 Sarrento Valley Rd.
Bldg. 7
San Diego, CA 92121
(714) 481-6000

Spectraphonics, Inc.
1531 St. Paul St.
Rochester, NY 14521
(716) 266-3550

SPED Publications
2010 Eagleview
Colorado Springs, CO 80909

Stencil Cutting and Supply
2205 California St. N.E.
Minneapolis, MN 55418
(612) 781-4245

Stocker and Yale, Inc.
138 Brimbal Ave.
Beverly, MA 01915
(617) 927-3940

Summit Services, Inc.
535 Division St.
Campbell, CA 95008
(408) 378-1251

Talos System
7419 E. Helm Dr.
Scottsdale, AZ 85260
(602) 948-6540

Taylor Enterprises
(formerly Mechstat, Inc.)
830 N.E. Loop 410
Suite 505
San Antonio, TX 78209
(512) 828-0203

Technical Aids to Independence, Inc.
Services and Products for the Severely Handicapped
12 Hyde Rd.
Bloomfield, NJ 07003
(201) 338-8826
(201) 338-6313

Ted Hoyer & Company, Inc.
P.O. Box 2744
2222 Minnesota St.
Oshkosh, WI 54903
(414) 231 7970

Telesensory Systems, Inc.
3408 Hillview Ave.
P.O. Box 10099
Palo Alto, CA 94304
(415) 493 2626

Teletrym Corporation
Subsidary of Micon Industries
252 Oak St.
Oakland, CA 94607
(415) 763 6033

Telex Communications
9600 Aldrich Ave. So.
Minneapolis, MN 55420
(612) 884-4051

Thera-Plast Company, Inc.
P.O. Box 341
Suffern, NY 10901
(914) 357 6154
(212) 233 6036

Thorn Automation, B.U.
Oregondreef 17
Utrecht
The Netherlands

Touch Turner, Inc.
443 View Ridge Dr.
Everett, WA 98203
(206) 252 1541

Triformation Systems, Inc.
3132 S.E. Jay St.
Stuart, FL 33494
(305) 283-4817

Trinity Industries
1835 Alta Dr.
Las Vegas, NV 89106
(302) 384-9184

Typewriting Institute for the Handicapped
3102 W. Augusta Ave.
Phoenix, AZ 85021
(602) 939-5344

Ventura: Research and Rehabilitation Products
35 Loughton Ave.
Danville, IN 46122
(317) 745-2989

Vocational Guidance and Rehabilitation Services
2239 E. 55 St.
Cleveland, OH 44103
(216) 431 7800

Votrax: Division of Federal Screw Works
500 Stephenson Hwy.
Troy, MI 48084
(313) 588 2050

VSC Corporation
185 Berry St.
San Francisco, CA 94107
(415) 495 6100

Wayne Engineering Company
Special Education Division
4120 Greenwood Ave.
Skokie, IL 60076
(312) 676 2170

Worcester Manufacturing Company
111 W. Timonium Rd.
Timonium, MD 21093
(301) 252 0055

Worldwide Games
P.O. Box 450
Delaware, OH 43015
(614) 369 9631

WTB, Inc.
1259 Millikin Pl. N.E.
Warren, OH 44483

Zaner-Bloser
612 No. Park St.
Columbus, OH 43215
(614) 221 5851

Zygo Industries, Inc.
P.O. Box 1008
Portland, OR 97207
(503) 297 1724

Appendix B
Services Available to Handicapped Students; Assistive Device Access Systems

Many new services are now being developed to meet the personal and vocational needs of handicapped people. In the interests of the student as well as the staff, some of the services now available are summarized below. The services included here, probably only a small sample of all the services that actually exist, were suggested by the sources that responded to a search for assistive devices.

Recognizing that needs vary with circumstances, we have indicated services which, in our opinion, are of particular interest to students, college administrators, or both, in most situations. We have done this by using the following abbreviations:

S = students
C = college administrators, and
C/S = college administrators and students.

We have also tried to indicate the organization's status with the following abbreviations:
B = business
G = government
GS = government-supported
NP = nonprofit.

1. Accent on Information (NP, C/S)
   P.O. Box 700
   Bloomington, IL 61701
   (309) 378 4213

Performs updated database searches on topics of interest to the handicapped (furniture, food, clothing, and sports, for example). A small charge for searches. Annual publication, *Accent on Living* ($10.00, lists references, services, and equipment for disabled individuals. 1/80).

2. AFL-CIO Human Resources, (GS,C)
   Development Institute (HRDI)
   815 16 St., N.W.
   Washington, DC 20006
   (202) 638 3912

Provides many services to labor, government, and business in the areas of training and manpower. HRDI representatives can provide technical assistance in vocational education programs in postsecondary schools. These representatives are also available as consultants to state and local vocational education institutions. They can direct vocational education courses toward existing and projected job opportunities. HRDI instructors will also train students for unionized labor positions in roofing, carpentry, etc. Placement assistance is offered.

3. American Coalition of Citizens with Disabilities, Inc. (NP,C)
   875 Avenue of the Americas
   Room 2203
   New York, NY 10001
   (212) 564 7809

Provides information, consultation, and speakers to business and industry on devices for job accommodations and model affirmative action programs. Also conducts accessibility studies and surveys, and assists with compliance to affirmative action legislation. Consults with colleges and other institutions for a small negotiable fee, and publishes a newsletter dealing with product information and case studies of creative occupational accommodations.

4. American Foundation for the Blind (NP,C)
   15 W. 16 St.
   New York, NY 10011
   (212) 620-2000
   or
   1660 L St. N.W.
   Suite 214
   Washington, DC 20036

Offers to individuals and organizations information and legislative assistance on services that are, or should be, available to the blind. Answers phone or mail queries, and maintains a free library of publications, films, and educational program listings. Conducts research in medicine and other technological areas, and publishes the *Journal of Visual Impairment* and other literature for professionals. Works with consumer organizations and rehabilitation agencies, in addition to maintaining, in Washington, D.C., an advocate organization that provides information on current and pending legislation.

5. American Printing House for the Blind (GS, NP, C/S)
   1839 Frankfort Ave.
   P.O. Box 6085
   Louisville, KY 40206
   (502) 895-2405

Develops and disseminates to schools and state agencies publications and educational materials for the visually impaired. Maintains an Instructional Materials Reference Center (IMRC) which accumulates, evaluates, and disseminates instructional materials. Offers some consultative services for those who teach the visually impaired. Maintains a central catalog of textbooks in braille, large type, and recorded form, as well as a registry of educational aids manufactured for the visually handicapped.

6. ASI Teleprocessing Inc., (B, C/S)
   123 Water St.
   Watertown, MA 02172
   (617) 923-1850

Designs Audio Response Time-Sharing Software Systems as auditory and tactile sensory aid services for blind persons. Audio response component of system makes possible a large number of remotely located users to operate services and receive verbal responses. Subscriber may store additional information for future reference or command the computer to provide voice, braille, and link copies. Programs are divided into two categories: (1) time-sharing software and (2) application programs to be shared on a nonprofit basis among facilities serving the handicapped. Services available include: (1) Editor Service, a basic writing service; (2) Justifier Service, prints text into various formats; (3) Braille

Service, translates print into braille; (4) Form Service, organizes information into a format that can be specifically retrieved; and (5) the basic program, which permits the writing of programs to calculate statistics, trigonometric functions, roots, etc. For information about the hardware, see the directory entry.

7. Association of Radio Reading Services (NP, S)
   1745 University Ave.
   St. Paul, MN 55104

Promotes the growth of radio services and the advancement of technology for the handicapped. Each radio reading service is autonomous. Handicapped listeners hear selected programs over Subsidiary Communications Authorization (SCA) receivers. Radio reading services have a privileged status under copyright law so certification of eligibility is necessary to obtain an SCA receiver. Reading material includes newspapers, books, plays, and speeches. Telephone catalog shopping service may also be offered. Each radio reading service offers different programs. Contact the association for local service.

8. ATP: Services for Handicapped Students (B, C/S)
   P.O. Box 592
   Princeton, NJ 08541
   (609) 771-0151

Provides alternative testing arrangements for visual, physical, hearing, and learning impairments. Documentation of an impairment causing "nonstandard" administration is needed.

9. Blind Outdoor Leisure Development (NP, S)
   533 E. Main St.
   Aspen, CO 81611
   (303) 925-8922

Year-round recreational organization gives blind individuals an opportunity to learn downhill skiing, rafting, swimming, horseback riding, golfing, and fishing. Total volunteer program. Main office will help set up local clubs. Well developed program at Aspen for visually-impaired individuals interested in spending time at the resort.

10. Brodhead-Garrett (B, C/S)
    4560 E. 71 St.
    Cleveland, OH 44105
    (800) 321-6730
    OH residents: (800) 362-8915

Offers vocational skills and development program that calls for high degree of involvement between teacher and student. Program includes detailed inventory system with learner data sheets, social and personal adjustment sheets, and instruments. Vocational profiles of students also offered. Many components can be adapted for physically disabled students.

11. Captioned Films for the Deaf (GS, S)
    5034 Wisconsin Ave. N.W.
    Washington, DC 20016
    (202) 363-1308

Offers free loan service of captioned 16-mm. films to groups that can demonstrate their intention to use films for nonprofit purposes and can guarantee that theatrical films will be shown to hearing-impaired persons. Apply to the center for certification to use the loan service.

12. Colorado Outdoor Education Center (B, C)
    P.O. Box 697
    Breckenridge, CO 80424
    (303) 453-6422

Conducts seven-day training course in the Rocky Mountains for teachers of physically and developmentally disabled young people and adults. Emphasizes techniques for teaching outdoor and wilderness skills, including hiking, backpacking, emergency care, and safety. College credit is available. Cost of course ($235, 5/80) includes instruction, food, equipment (except boots), lodging, and insurance.

13. Information and Research Utilization Center in
    Physical Education and Recreation for the
    for the Handicapped (NP, C)
    1201 16th St., N.W.
    Washington, DC 20036
    (202) 476-3464

Publishes books, guides, bibliographies, reprints, and abstracts. Offers literature searches and other services to professionals who work with disabled persons. Charges for information services.

14. Jewish Braille Institute of America, Inc. (NP, S)
    110 E. 30 St.
    New York, NY 10016
    (212) 889-2525

Although the Jewish Braille Institute primarily serves blind or visually impaired Jewish people, services are available to people regardless of religious affiliation. Services include braille prayerbooks, special brailling and sound recording of all textbooks, material, and exams necessary for a Jewish education, counseling on college and graduate school admissions, specialized materials prepared for students of Judaica, library of large-print braille, cassettes and reels in English and Hebrew. Some services for the elderly provide religious publications and materials as well as periodical literature.

15. Library of Congress (NP, S/C)
    Division for the Blind and Physically Handicapped
    Washington, DC 20542
    (202) 882-5500

Offers a variety of services to individuals who provide certification of disability. In each state this division has a network of regional cooperating libraries acting as a liaison between the user and the Library of Congress. For a listing of cooperating libraries and services, contact the Division. Also available are reference circulars and bibliographies with information in a variety of areas such as equipment, magazines, and travel.

16. Library Reproduction Services (B, S/C)
    1977 So. Los Angeles St.
    Los Angeles, CA 90011
    (213) 749-2463

Makes large-print reproductions, from original inkprints. Catalog of 7,000 titles available, mostly primary and secondary education books. Cost estimates within 10 percent are obtained by multiplying the total page count by 29 percent and adding a $10.00 processing charge.

17. LINC Services, Inc. (GS, C)
c/o Chuck Lynn, Information Specialist
829 Eastwind Dr.
Westerville, OH 43081
(614) 890-8200

Sells materials funded by the Bureau of Education for the Handicapped, and provides direct services, such as market and manufacturing research and publicity and advertising, to developers and publishers of special education materials.

18. Louis Braille Foundation for Blind Musicians, Inc.
215 Park Ave.
New York, NY 10003
(212) 982-7290

Helps blind musicians achieve professional status in composing, performing, and teaching. Provides many services, such as auditions, evaluations, consultations, dictations, and transcriptions. Also produces demonstration recordings, and obtains paid engagements, publicity, and promotional assistance.

18.1 The MACRO Lab
New Jersey Institute of Technology
323 High Street
Newark, NJ 07102

Conducts research and develops devices to "help handicapped individuals become active participants in the scientific community."

19. Mainstream (GS, C)
1200 15 St., N.W.
Washington, DC 20005
(202) 833-1136

Enhances public awareness and acceptance of affirmative action for handicapped people through conferences, seminars, and publications. Publishes a free monthly newsletter summarizing articles by government agencies. Also develops special projects to assist in bringing handicapped people into the mainstream of society, and maintains a legislative hotline equipped with a telecommunications device for hearing-and speech-impaired individuals.

20. National Association for the Visually Handicapped
(NP, C/S)
305 E. 24 St.
New York, NY 10010
(212) 889-3141
or
3201 Balboa St.
San Francisco, CA 94120
(415) 221-3201

Provides a variety of large-print services for the visually impaired. These include counseling programs, referrals, large-print publishing, and a lending and free distribution library. In addition, NAVH acts as a consultant on effective use of visual aids, and promotes and publishes information about and for the partially sighted individual. Also counsels paraprofessionals and professionals who work with visually impaired people.

21 National Braille Association, Inc., (NP)
654A Goodwin Ave.
Midland Park, NJ 07432
(201) 447-1484

Supplies textbooks and supplemental materials in braille. Will transcribe for undergraduate or postgraduate students in the United States and Canada, but will not transcribe scientific books or mathematics texts that require transcription in the Nemeth Braille Code, music books requiring transcription in the Music Code, and books that are not in English. Costs vary according to number of pages, amount of duplication, and proofing.

22. National Institute for Rehabilitation Engineering
(NP, C/S)
97 Decker Rd.
Butler, NJ 07405
(201) 838-2500

Designs and sells equipment to handicapped individuals who come to the institute for a week-long process of evaluation, trial fittings, and counseling. Also provides placement services for the severely and multiply handicapped. Occasionally establishes field clinics at other institutions with sufficient need, but does not usually sell equipment to nonclients. Variable pricing for organizations and free evaluation reviews of problem areas.

22.1 National Institute of Handicapped Research
400 Maryland Ave., S.W.
Washington, DC 20202
(202) 245-0565

NIHR maintains a number of regional centers to carry out research, development, and training activities directed toward alleviating disabilities and reducing dependency. Some of the centers also conduct continuing education and in-service courses. The system includes 21 Rehabilitation Research and Training Centers; 5 Regional Rehabilitation Research Centers; the Helen Keller National Center for Deaf-Blind Youths and Adults and its 8 regional offices; 13 Rehabilitation Engineering Centers; and 28 Model Regional Systems of Spinal Cord Injury Rehabilitation. These centers are widely distributed throughout the country. More detailed information on the locations and activities of the centers is available from:

Information Exchange Program
Arkansas Rehabilitation Research and Training Center
P.O. Box 158
Hot Springs, AR 71901

23. National Rehabilitation Information Center (GS, C)
4407 8 St. N.E.
The Catholic University of America
Washington, DC 20017
(202) 635-5822

Maintains library of research reports, books, microfiche, journals, and audiovisual materials on all aspects of rehabilitation. Offers free computerized searches and free copies of reports when available. Newsletter, in both English and braille, available by subscription.

24. Office for Handicapped Individuals (G, C/S)
c/o Helga Roth
Department of Education
200 Independence Ave., S.W.
Rm. 338D
Washington, DC 20201
(202) 472-3796

Identifies and disseminates information regarding federal programs and activities. Clearinghouse service provides responses to indivi-

dual inquiries and acts as a resource for other organizations that supply information to and about disabled people. Office is compiling directory that profiles sources of information. Free subscription to bimonthly publication, *Programs for the Handicapped*, which reports new programs, important federal meetings, and other information that concerns handicapped individuals.

25. People to People Committee for the Handicapped (NP, C)
    1522 K St., N.W.
    Suite 1130
    Washington, DC 20005
    (202) 785-0755

Distributes information on technical assistance and other U.S. programs and publishes a newsletter on national and international meetings and relevant legislation. Directory of all organizations for the disabled available for $3.00 (4/80).

26. Recording for the Blind (NP, S)
    215 E. 58 St.
    New York, NY 10022
    (212) 751-0860

Records educational books and maintains a free loan Master Tape Library for professionals and students who are blind or unable to read print because of physical or visual impairment. Requests must be made for specific titles, which are listed in a catalog available for $5.00 (1/80). Records books on request, when volunteer help is available, and provides raised line drawings of graphs and tables when necessary.

27. Talent Assessment, Inc. (B,C)
    P.O. Box 5087
    Jacksonville, FL 32207

Offers vocational aptitude testing and training. No reading required. The Talent Assessment Program (T.A.P.) is useful in areas such as CETA, Vocational-Handicapped, Women-Title IX, Vocational Disadvantaged, Corrections 94-142, and Vocational Rehabilitation.

28. Telephone Pioneers of America (NP, C/S)
    Attn: Blaine Clegg
    195 Broadway
    New York, NY 10007
    (212) 393-2784

Brings together veteran employees of the Association of American Telephone and Telegraph Company to provide a wide variety of community services, including designing and constructing modified equipment and tutoring handicapped individuals.

29. U.S. Association for Blind Athletes (NP, S)
    55 W. California Ave.
    Beach Haven Park, NJ 08008
    (609) 492-1017

Founded for the purpose of developing the individual independence of blind persons through athletic competition without unnecessary restrictions. Promotes goodwill and independence through friendly competition. Memberships available to blind individuals, P.E. instructors, coaches, special educators, and other interested people. National competitions held in goalball, swimming, track and field events, women's gymnastics, men's wrestling, and some winter sports. Local chapters forming.

30. Valpar Corporation (B, C)
    3801 E. 34 St.
    Suite 105
    Tucson, AZ 85713
    (602) 790-7141

Offers extensive vocational testing to measure work environment skills such as conceptual understanding, size discrimination, whole body range of motion, print and electrical circuit reading. Modifications are available for the visually and aurally handicapped.

31. Vocational Research Institute (B, C)
    Jewish Employment and Vocational Service
    1624 Locust St.
    Philadelphia, PA 19103
    (215) 893-5900

JEVS Work Sample Kits present realistic occupational tasks that assess students' vocational strengths and weaknesses in a simulated work environment. The five to seven day process provides hardware, software, training consultation, and research studies.

32. Volunteer Braille Services (NP, S)
    P.O. Box 1592
    Houma, LA 70361
    (504) 872-9658

Provides an assignment service for braille transcription and the braille book bank which makes available college textbooks in braille at less than cost. Has catalogs of braille materials for textbooks, general interest, music, computer science, statistics, chemistry, finance, etc. Publishes a reader-transcriber registry and sponsors community workshops.

Assistive Device Access Systems

1. Accent on Information
   P.O. Box 700
   Bloomington, IL 61701
   (309) 378-4213

Updated information bank of aids and devices for the physically disabled person. Computerized search in all areas of living needs for a modest fee.

2. Adaptive Systems Corporation
   1650 S. Amphlett Blvd.
   Suite 307
   San Mateo, CA 94402
   (415) 573-6114

Information system that consists of a data base and an index book called *The Locator*, which, in addition to linking equipment to manufacturers by cross referencing, also provides a detailed explanation of the functional indexing system. Emphasis is on living aids.

3. Assistive Device Center
   School of Engineering
   California State University, Sacramento
   6000 J St.
   Sacramento, CA 95819
   (916) 454-6422

Computerized catalog of assistive devices for students in the natural and applied sciences. Funded by the California State Department of Education, access to this data base is limited to the college

and university system in California. However, there are current efforts to make the data base available on a national level.

4. Computer Center
   California State University, Hayward
   Hayward, CA 94542
   (415) 881-3781

Distributes a catalog of adaptations for computers and a directory consisting of catalogs of commercial companies.

5. Innovative Systems Research, Inc.
   103 Cooper River Plaza East
   Pennsauken, NJ 08109
   (609) 665-9250

Uses computer network to link representatives from research and development, rehabilitation engineering, information sciences, manufacturing, special education, and consumers.

6. International Commission on Technical Aids, Housing, and Transportation (ICTA)
   ICTA Information Centre
   FACK, S-161 25 Bromma 1, Sweden

Promotes an international exchange of information through publications, conferences, and seminars.

7. Disabled Living Foundation
   346 Kensington High Street
   London, W14 8NS, England

Has over 900 adaptive devices on display. Information provided on availability, manufacturer, and price.

8. National Rehabilitation Information Center
   4407 8 St., N.E.
   The Catholic University of America
   Washington, DC 20017
   (202) 635-5822

Data base of rehabilitation devices. Computer printouts describe device, source of design, and the functional disabilities it serves. Devices may or may not be commercially available.

9. Veterans Administration
   Foster Palmer, Project Officer
   Marketing Center
   Hines, IL
   (312) 681-6700

Publishes computerized directory of personal living aids. Funded by the government and implemented by a New York company, the project is expected to be completed in early 1981.

10. Wisconsin Vocational Studies Center
    University of Wisconsin, Madison
    964 Educational Science Building
    1025 W. Johnson St.
    Madison, WI 53706
    (608) 262-1234

Catalog (with pictures) describes modifications and adaptations of tools, equipment, and machinery used successfully for vocational training of the handicapped.

Appendix C
Information Resources: Organizations, Periodicals, Publications, and Audiovisuals

In most cases, addresses and telephone numbers are provided as additional information resources. Included in this section are (1) organizations that deal with handicapped issues and that may be able to answer with expert advice some of the difficult questions that arise during the effort to provide accessibility and (2) a list of publications, including periodicals and audiovisuals that emphasize handicapped issues.

Organizations

1. Accent on Information
   P.O. Box 700
   Bloomington, IN 61701
   (309) 378-4213

2. American Alliance for Health, Physical Education and Recreation
   Physical Education and Recreation for the Handicapped
   Information and Research Utilization Center
   1201 16 St., N.W.
   Washington, DC 20036
   (202) 833 5547

3. American Association for the Education of Severely and Profoundly Handicapped
   1600 W. Armory Way
   Seattle, WA 98119
   (206) 283 5055

4. American Foundation for the Blind
   15 W. 16 St.
   New York, NY 10011
   (212) 924-0420

5. American Occupational Therapy Association
   6000 Executive Blvd.
   Rockville, MD 29852
   (301) 770 2200

6. American Orthotic and Prosthetic Association
   1440 N St., N.W.
   Washington, DC 20005
   (202) 234 8400

7. American Physical Therapy Association
   1156 15 St., N.W.
   Washington, DC 20005
   (202) 466 2070

8. American Printing House for the Blind
   P.O. Box 60850
   Louisville, KY 40206
   (502) 895 2405

9. American Speech and Hearing Association
   10801 Rockville Pike
   Rockville, MD 20852
   (301) 897 5700

10. Association for Children with Learning Disabilities (ACLD)
    Janet Trotter
    1243 E. Catalpa
    Springfield, MO 65804
    (417) 862-7826

11. Bureau of Education for the Handicapped
    400 Maryland Ave., S.W.
    Washington, DC 20202
    (202) 245 2709

12. Communications Foundation
    600 New Hampshire Ave., N.W.
    Washington, DC 20037
    (202) 333-0800

13. Deafness Research Foundation
    366 Madison Ave.
    New York, NY 10017
    (212) 682-3737

14. Handicaaped Learner Materials Distribution Center
    Indiana University
    Bloomington, IN 47405
    (812) 337-0531

14.1 HEATH/Closer Look
    Resource Center
    Box 1492
    Washington, DC 20013
    (202) 833-4707
    Voice/TTY

15. Job Development Lab
    Rehabilitation Research and Training Center
    George Washington University Medical Center
    2300 Eye St., N.W.
    Washington, DC 20052
    (202) 676-3847

16. Lions International
    York and Cemak Roads
    Oak Brook, IL 60521
    (312) 986-1700

17. Midwest Regional Resource Center
    Drake University
    1332 26 St.
    Des Moines, IA 50311
    (515) 271-3936

18. National Aeronautics and Space Administration
    Technology Utilization Program
    600 Independence Ave., S.W.
    Washington, DC 20546
    (202) 755-3140

19. National Amputation Foundation
    12-45 150 St.
    Whitestone, NY 11357
    (212) 767-0596

20. National Association for Hearing and Speech Action
    814 Thayer Ave.
    Silver Spring, MD 20901
    (301) 588-5242

21. National Association of the Deaf
    814 Thayer Ave.
    Silver Spring, MD 20910
    (301) 587-1788

22. National Easter Seal Society for Crippled Children and Adults
    2023 W. Odgen Ave.
    Chicago, IL 60612
    (312) 726-7866

23. National Eye Institute
    National Institutes of Health
    Building 31, Room 6A-25
    Bethesda, MD 20014
    (301) 496-5248

24. National Eye Research
    18 S. Michigan Ave.
    Chicago, IL 60603
    (312) 726-7866

25. National Foundation for the March of Dimes
    275 Mamaroneck Ave.
    White Plains, NY 10605
    (914) 428-7100

26. National Information Center for Special Education
University of Southern California
Los Angeles, CA 90007
(213) 741-6681

27. National Institute of Neurological and Communicative Disorders and Stroke
National Institutes of Health
Building 31
Bethesda, MD 20014
(301) 496-5751

28. National Institute for Rehabilitation Engineering
Consumer Advisory Service
97 Decker Rd.
Butler, NJ 07405
(201) 838-2500

29. National Library of Medicine
National Institues of Health
8600 Rockville Pike
Bethesda, MD 20014
(301) 496-6095

30. National Library Service for the Blind and Physically Handicapped
Library of Congress
1291 Taylor St., N.W.
Washington, DC 20542
(202) 882-4779

31. National Paraplegia Foundation
333 North Michigan Ave.
Chicago, IL 60601
(312) 346-4779

32. National Rehabilitation Information Center
308 Mullen Library
The Catholic University of America
Washington, DC 20064
(202) 635-5826

33. National Retinitis Pigmentosa Foundation
8331 Mindale Circle
Baltimore, MD 21207
(301) 655-1011

34. National Technical Information Service
Department of Commerce
5285 Port Royal Rd.
Springfield, VA 22151
(703) 557-4600

35. Office of Handicapped Individuals Clearinghouse on the Handicapped
OHI/ED
228-D Humphrey Bldg.
Washington, DC 20201
(202) 245-1961

36. Online Information International, Inc.
6455 Windermere Circle
Rockville, MD 29852
(301) 530-8513

37. People-to-People Committee for the Handicapped
1025 Connecticut Ave., N.W.
Washington, DC 20036
(202) 785-0755

37.1 Physics Learning Center
National Technical Institute for the Deaf
Rochester Institute of Technology
One Lomb Drive
Rochester, NY 14623
(716) 475-6897

37.2. Project on the Handicapped in Science
American Association for the Advancement of Science (AAAS)
1776 Massachusetts Ave., N.W.
Washington, DC 20036
(202) 467-4496

38. Recordings for the Blind
15 E. 58 St.
New York, NY 10022
(212) 751-8602

39. Rehabilitation Services Administration
Office of Human Development, ED
330 C St., N.W.
Washington, DC 20201
(202) 447-8477

40. Research Project Branch
Division of Innovation and Development
Bureau of Education for the Handicapped
400 Maryland Ave., S.E.
Washington, DC 20202
(202) 245-2275

40.1. SAVI
Lawrence Hall of Science
University of California
Berkeley, CA 94720
(415) 642-3679

41. Smithsonian Science Information Exchange
1730 M St., N.W.
Washington, DC 20036
(202) 381-4211

42. Special Office for Materials Distribution
Indiana University
Bloomington, IN 47401
(812) 322-0211

43. Veterans Administration
810 Vermont Ave., N.W.
Washington, DC 20420
(202) 389-4211

Canada

44. McMaster University
Department of Bioengineering
Chedoke Rehabilitation Centre
Ontario, Canada

45. Ontario Crippled Children's Center
P.O. Box 1700
P.O. Station "R"
Toronto, Ontario, M4G IR8, Canada

England

46. Aids Center, Disabled Living Foundation
346 Kensington High St.
London, W148NS, England

47. Castle Priory College
Thames Street
Wallingford, Oxon, England

Sweden

48. ICTA Information Centre
FACK S-161-03 Bromma 3
Sweden

From "Assistive Devices for Handicapped Students: A Model and Guide for a Statewide Delivery System," National Association of State Directors of Special Education, 1201 16th St., N.W., Washington, DC 20036. Price: $4.50.

Periodicals

Accent On Living
P.O. Box 700
Bloomington, IL 61701

Active Handicapped
528 Aurora Ave.
Metairie, LA 70005

The American Journal of Occupational Therapy
6000 Executive Blvd.
Rockville, MD 20852

Amicus, National Center for Law and the Handicapped
211 W. Washington
Suite 1900
South Bend, IN 46601

The Amp
National Amputation Foundation
12-45 150 St.
Whitestone, NY 11357

Braille Chess Magazine
Royal National Institute for the Blind
244 Great Portland St.
London WIN 6AA, England

The Caliper
Canadian Paraplegic Association
520 Sutherland Dr.
Toronto, Ontario, M4G 3V9, Canada

Castle
U.S. Braille Chess Association
c/o Gintautus Burba, President
30 Snell St.
Brockton, MA 02401

Challenge
Unit on Programs for the Handicapped
American Association for Health, Physical Education, and Recreation
1201 16th St., N.W., Washington, DC 20036

Choice Magazine Listening
14 Maple St.
Port Washington, NY 11050

COPH Bulletin
National Congress of Organizations of the Physically Handicapped
c/o Lee Fredric Wiedenhoefer
101 Lincoln Park Blvd.
Rockford, IL 61102

The Deaf American
National Association of the Deaf
814 Thayer Ave.
Silver Spring, MD 20910

Dialogue with the Blind
3100 Oak Park Ave.,
Berwyn, IL 60402

Disabled USA
President's Committee on Employment of the Handicapped
Washington, DC 20210

Encore
U.S. Library of Congress
National Service for the Blind and Physically Handicapped
Washington, DC 20210

En Passant Chess
John Graam, Editor
109 Kelvington Dr.
Monroeville, PA 15146

The Exceptional Parent
Room 700
Statler Office Building
20 Providence St.
Boston, MA 02116

Feeling Sports
Braille Sports Foundation
Suite 301
730 Hennepin Ave.
Minneapolis, MN 55402

Handi-Cap Horizons
3250 E. Loretta Dr.
Indianapolis, IN 46227

Handicapped Americans Report
2626 Pennsylvania Ave., N.W.
Washington, DC 20037

The Independent
Center for Independent Living
2539 Telegraph Ave.
Berkeley, CA 94704

Indoor Sports National Hookup
Indoor Sports Club, Inc.
Ira Inman, Editor
1255 Val Vista
Pomona, CA 94566

Leisurability
Box 281, Station A
Ottawa, Ontario, KIN 8V2, Canada

Lupus Life Line
Leanon Lupus Erythematosus Club
P.O. Box 10232
Corpus Christi, TX 78410

Mainstream, Magazine for the Blind
861 Sixth Ave.
Suite 610
San Diego, CA 92101

Matilda Ziegler Magazine for the Blind
20 W. 17 St.
New York, NY 10011

The MS Newsletter
P.O. Box 2215-N
Santa Maria, CA 93456

National Hookup
32 Margaret Dr.
Loudonville, NY 12211

National Wheelchair Athletic Association Newsletter
National Wheelchair Athletic Association
40-24 62nd St.
Woodside, NY 11377

New World for the Physically Handicapped
P.O. Box 1567
South Gate, CA 90280

On Your Own
University of Alabama
Continuing Education in Home Economics
P.O. Box 2967
University, AL 35486

Ostomy Quarterly
United Ostomy Association, Inc.
2001 W. Beverly Blvd.
Los Angeles, CA 90057

Paraplegia Life
National Spinal Cord Injury Foundation
369 Elliot St.
Newton Upper Falls, MA 02164

Paraplegia News
935 Coastline Dr.
Seal Beach, CA 90740

Physical Therapy
1156 15 St., N.W.
Washington, DC 20005

Recreation for the Ill and Handicapped
National Association of Recreational Therapists
Ypsilanti, MI 48197

Rehabilitation Digest
Canadian Rehabilitation Council for the Disabled
One Yonge St.
Suite 2110
Toronto, Ontario, M5E 1E8, Canada

Rehabilitation Gazette
4502 Maryland Ave.
S. Louis, MO 63108

Rehabilitation Literature
2023 W. Ogden Ave.
Chicago, IL 60612

Rehabilitation World
RIUSA
20 West 40 St.
New York, NY 10018

Sexuality and Disability
Human Sciences Press
72 Fifth Ave.
New York, NY 10011

Sigma Signs
Rehabilitation Education Center
Room 130
Oak St. and Stadium Dr.
Champaign, IL 61820

Sports 'n Spokes; Magazine for Wheelchair Sports and Recreation
Cliff Crase
Department A
6043 No. 9 Ave.
Phoenix, AZ 85013

Star Newsletter
6219 Naper Ave.
Chicago, Il 60633

Talking Book Topics
U.S. Library Service for the Blind and Physically Handicapped
Washington, DC 20542

Talking Sticks
Boy Scouts of America
Supply Division
P.O. Box 61030
Dallas/Fort Worth Airport, TX 75261

Therapeutic Recreation Journal
National Therapeutic Recreation Society
1601 No. Kent Street
Arlington, VA 22209

Trends for the Handicapped
Special issue of *Trends* (Spring 1978)
National Recreation and Parks Association
1601 No. Kent St.
Arlington, VA 22209

Visualtek Newsletter
Visualtek, Inc.
1610 26 Street
Santa Monica, CA 90404. (General information about new products designed by Visualtek and other companies for the visually impaired.)

Wheelchair Competitor
30396 Stellamar Dr.
Birmingham, MI 48010

Other Publications and Audiovisuals

During the research into assistive devices, many good publications and audiovisual materials for and about the physically handicapped were found. The following is a compilation of selected publications and audiovisuals that would be informative for the college administrator or the disabled student. The list is not intended to be all-inclusive.

Because of the variety of sources, complete information was not always available, and some references do not list prices, summaries, or publication dates. Some may be out of print or may have a higher price because of inflation.

Bibliographies and Directories

Most organizations and advocacy groups for the handicapped provide books and publications. The following are examples:

National Federation of the Blind
1800 Johnson St.
Baltimore, MD 21230

Extensive list of papers and publications on topics concerning the visually impaired is available in print, braille, or recording.

National Rehabilitation Information Center
Eighth and Varnum Sts.
Catholic University of America
Washington, DC 20064

A computerized bibliography and other relevant information are available by contacting an information specialist. Library is open to the public. No charge.

People-to-People Committee for the Handicapped
Suite 1130
1522 K St., N.W.
Washington, DC 20005

Has directory of all organizations interested in handicapped persons. $3.00.

Research and Bibliography Division
Gallaudet College
Kendall Green
Washington, DC 20002

A bibliography of pertinent catalogued holdings of deaf education collection is available. Also, information searches will be done without charge.

Audiovisuals

USER:
C = college administrators
S = students
C/S = college administrators and students

Job Development Laboratory. *Approach to Independence: Functional Adaptations.* Washington, D.C., Rehabilitation Research and Training Center, The George Washington University, 1978. Videotapes ($75.00, 1978) and 16-mm film ($250.00, 1978). Demonstrates the process of adaptation and assisting with devices in occupational settings. Film is available with captioning for the hearing impaired. (C)

Los Angeles Community College District, Office of Educational Resources. *We Can Do It.* Los Angeles, CA. Videocassette ($125.00, 1979) and MP reel, 16-mm ($300.00, 1979). Discusses adaptations required in the classroom by physically handicapped, blind, and deaf college students. (C)

Science for the Blind Products. *Cassette Aud-a-log: Cassette Aud-a-Buy.* Box 385, Wayne, PA 19087. C-90 cassette ($3.00). Current editions of SFB special products with audible demonstrations as well as an edition of current gift selections. (C/S)

Taylor, Billie. *Basic Introduction to Typing for the Visually Handicapped Student.* Colorado, SPED Publications, 1980. 12 cassette tapes, a teaching manual, and a compact headset to plug into the tape recorder ($80.00, 1980). Basic typing course for the visually handicapped. Written in simple form for the younger student yet is comprehensive enough for older students and compactly packaged to be carried as a book. (S)

John G. Shedd Aquarium
1200 So. Lake Shore Dr.
Chicago, IL 60605

Provides thermoflex copies of biological materials for visually impaired persons. (X/S)

Publications

American Foundation for the Blind. *The One-Hand Manual Alphabet.* New York: American Foundation for the Blind. 1980. Flyer showing hand positions for the twenty-six letters of the alphabet. (S)

Ballenger, W.L., and Cole, J.L. *Project Vocab: Vocal Computer-Assisted Instruction for the Blind.* Raleigh, North Carolina: North Carolina State University, Office of Research and Extension Services, 1978. (C)

Betty Crocker Food and Nutrition Center. *Cooking with Betty Crocker Mixes: 5th Large Type Edition.* Minneapolis: 1979. Free single copy. (Also available in braille and recording.) (S)

Boston Music Company. *Digest for Piano Pieces for the Left Hand Alone.* Boston: Boston Music Company, 1980. (S)

Bruck, Lilly. *Access: The Guide to Better Life for Disabled Americans.* New York: Random House, 1978. ($12.95, 1979.) Consumer information concerning aids and services for special needs. (C/S)

Canter. *Beyond TV Dinners: Three Levels of Recipes for Visually Handicapped Cooks.* Louisville, KY: American Printing House for the Blind, ($14.45, 1980). 214 pp. (S)

Community Services for the Visually Handicapped. "Sewing Manual." (160 North LaSalle, Room 1700, Chicago, IL 60601.) Detailed instructions for both hand and machine sewing. (C)

Corbin, Charles B. *Inexpensive Equipment for Games, Play and Physical Activity.* Dubuque, IA: William C. Brown Company, 1972. (C)

Cowart, James F. *Instructions Aids for Adaptive P.E.* Hayward, CA: Alameda County Schools, 1977. (C)

Florida Council of the Blind. Rehabilitation Training Aids Laboratory. Florida: Department of Education, Division of Blind Services, 1979. Final report of program that established a training aids laboratory at Florida State University in Tallahassee. Students were trained in the effective use of devices such as the Optacon and Speech Plus Talking calculator. (C)

G.K. Hall and Company. *Large Print Books, 1980 Catalog.* Boston: G.K. Hall and Company, 1980. Variety of current nonfiction,fiction, inspirational, and self-help books. (S)

Gardner, Warren H. *Text-Manual for Remedial Handwriting.* Danville, IL: Interstate Printers and Publishers, 1966 ($3.25; with practice tablet designed for use with text, $3.75, 1980). (C/S)

Geddes, Delores. *Physical Activities for Individuals with Handicapping Conditions.* St. Louis: C.V. Mosby, 1978, (133 pp., $6.00, 1978). (S)

Gloria Hale, ed. *The Source Book for the Disabled.* New York: Paddington Press, 1979. (288 pp., $9.95, 1980). Self-help resource publication dealing with communication and mobility; sexuality; home adaptations; leisure and recreation; the disabled parent; attitudes, economics and employment; personal care; and the disabled child. All major disability groups are considered. (C/S)

IMPART Demonstration Center. *Assistive Devices Purchasing and Supply Catalog.* Austin, TX: Texas Rehabilitation Commission Impart Center, 1980. This catalog includes the latest products of rehabilitation engineering. It is intended as a reference for rehabilitation personnel submitting clients' purchase requests. Contact John O. Robinson, Assistant Commissioner for Purchasing and Supply, for additional information (512) 926-1661. (C)

Information and Research Utilization Center. *P.E. and Recreation for the Handicapped.* Washington, DC: American Alliance for Health, Physical Education and Recreation, 1973. (C)

Institute for Information Studies. *Rehabilitation Engineering Sourcebook.* Falls Church, VA: Institute for Information Studies, 1980. ($5.00, 1980). Looseleaf series of case studies of rehabilitative solutions to problems of daily living created by physical limitations. Offers guidelines and ideas for communication, homemaking, mobility, recreation, training, transportation, work problems, and other activities. Illustrations and resources for further information are also included. (C)

Jasper, K.M. Marsh and Pollard, S.W. *National Resource Directory: A Guide to Services and Opportunities for Persons with Spinal Cord Injury or Disease and Others with Severe Physical Disabilities.* Newton Upper Falls, MA: National Spinal Cord Injury Foundation, 1979. (C/S)

Johanna Bureau for the Blind and Visually Handicapped, Inc.
22 West Madison St.
Suite 540
Chicago, IL 60602. School textbooks. Some nonfiction of general interest to adults. (S)

Johnson, Donald D. and Castle, William E., eds. *InfoSeries 2: Equipment Designed to Improve the Communication Skills of the Deaf.* Springfield, VA: National Technical Information Service (NTIS). ($6.50, 1980). (C)

Heller, Jack. *Typing for the Physically Handicapped: Methods and Keyboard Presentation Charts.* New York: McGraw-Hill Book Company, 1980. ($100.00, 1980). Looseleaf binder contains brief descriptions of the most common handicaps and their implications for typing teachers, as well as charts and drills for all possible combinations of missing fingers. Adaptable to any typing text. Can be reproduced. (C)

Kidwell, Ann Middleton and Greer, Peter Swartz. *Sites, Perception and the Nonvisual Experience: Designing and Manufacturing Mobility Maps.* New York: American Foundation for the Blind, 1973. ($7.00, 1980). Explores various aspects of the development of physical spatial maps for blind persons. (C)

Klinger, Judith L. *"Communication and Vocational Aids"* (in *Self-Help Manual for Arthritis Patients).* New York: Arthritis Foundation, Allied Health Professions Section, 1974. ($1.00, 1979). (C/S)

Laus, Michael D. *Travel Instruction for the Handicapped.* Springfield, IL: Charles C. Thomas, Publisher, 1977. ($13.75, 1980). Guide for program to teach visually handicapped persons to travel within the community. (C/S)

Left-Handed Writing Instruction Manual. Danville, IL: Interstate Printers and Publishers, 1958. ($.75, 1980). (C/S)

Lifchez, Raymond, and Winslow, Barbara. *Design for Independent Living: The Environment and Physically Disabled People.* New York: Whitney Library of Design, 1980. 208 pp. ($25.00, 1980). This book contains biographical sketches of seven disabled people and their adaptations and attitudes; a general overview of the problems of being disabled and independent; techniques in environmental design; and descriptions of devices for independent living. (C)

Lutheran Braille Workers, Inc., Sight-Saving Division, 495 Ninth Ave., San Francisco, CA 94118. Religious and educational materials in English and 40 other languages. (S)

Manual of Equipment to Help Students with Physical Handicaps. For additional information concerning the manual contact: Sandra Bearman, Adviser to Disabled Students, The Open University, P.O. Box 79, Milton, Keynes, Buckinghamshire, NK7 6AA, England. (C)

Massey, B.C. and others. "Experiences at College: The Joys and Difficulties Encountered." *Blindness.* Washington, DC: American Association of Workers for the Blind, 1971. pp. 95-119. (S)

National Association for Visually Handicapped. *Guide to Visual Aids and Illumination.* New York: National Association for Visually Handicapped, 1974. 19 pp. (C)

National Federation for Blind College Students. *Handbook for Blind College Students.* Baltimore, MD. National Federation for the Blind, 1977. This handbook for the visually impaired student offers suggestions, ideas, and techniques for coping in a sighted environment. It gives advice on the relationship of the student to a college professor and explains the type of expectations a student should or should not have. Available only in print. (S)

National Library Service for the Blind and Physically Handicapped. *Volunteers Who Produce Books.* Washington, DC: National Library Service for the Blind and Physically Handicapped, 1978. Directory of organizations that provide braille, recorded, or large-print material for visually handicapped people. Also includes information on available books, chief suppliers of braille writing equipment, list of proofreaders certified by the Library of Congress, and special education resources. (C)

National Spinal Cord Injury Foundation. *National Wheelchair Marathon Program Book: Guide to Wheelchair Sports.* Newton Upper Falls, MA: National Spinal Cord Injury Foundation, 1980 ($3.00, 1980). (S)

National Technical Institute for the Deaf. *The Tutor/Notetaker Comic Book.* Rochester, NY: National Technical Institute for the Deaf ($.50, 1980). Presented in an amusing format, this comic book tries to show what the notetaker does, why it is done, who does it, etc. (C)

The New York Times, *New York Times Large Type Weekly,* 229 West 43rd St., New York, NY 10036. Reprints selected editorials, news stories, etc. Includes crossword puzzle. (S)

O'Donovan, Phillip and Lind, Larry F. *A Fibre Optic Direct Translation Reading Aid for the Blind.* New York: American Foundation for the Blind, 1980. ($3.00, 1980). (C)

Osguthorpe, Russell. *The Tutor/Notetaker.* Washington, DC: Alexander Graham Bell Association for the Deaf. ($6.00, 1980). (C)

Osguthorpe, Russell; Wilson, J.J.; Goldman, W.R.; and Panera, J.R. *The Manager's Guide.* Washington, DC: Alexander Graham Bell Association for the Deaf. ($6.25, 1980). (C)

Pollet, Dorothy, and Haskell, Peter C. *Sign Systems for Libraries: Solving the Wayfinding Problem.* New York: R.R. Bowker Co., 1980. ($24.95). 271 pp. (C)

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*U.S. GOVERNMENT PRINTING OFFICE: 1981 340-130/0512

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